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ABSTRACT

There are not nearly enough reading specialists to meet the needs of the large number of students with reading deficiencies. In order to determine the effectiveness of training teachers in content areas to play an active role in helping students improve their reading skills, 15 secondary level teachers representing the fields of mathematics, science, social studies, and technology received instruction on the nature, measurement, and treatment of students with reading skill problems. These teachers then integrated desired teaching strategies and procedures with their ongoing instruction of subject content. The reading skill levels of their students were tested prior to the application of project-related teaching procedures and then were retested after 18 weeks. Test results and evaluations by project teachers indicated that content area teachers can make a significant contribution to helping students improve their reading skills. (Items in the appendix include a teacher training manual, slide-tapes used to instruct teachers, record keeping forms, test data from project classes, evaluative instruments, and comments by project teachers.) (Author/JF)

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HELPING STUDENTS IMPROVE READING SKILLS IN SELECTED CONTENT AREAS

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Reading in Content Areas; Content Reading; Reading Comprehension; Reading Instruction; Functional Reading; Interpretive Reading; Reading Skills; Critical Reading; Cloze Procedure; Decoding Reading; Factual Reading; Reading Achievement; Reading Development; Reading Habits.

ABSTRACT

Grossly inadequate numbers of reading specialists compared to the number of students with reading deficiencies prompted the training of teachers in content areas to play an active role in helping students improve their reading skills. Fifteen secondary level teachers representing the fields of mathematics, science, social studies, and technology received instruction on the nature, measurement, and treatment of students with reading skill problems. Project teachers integrated desired teaching strategies and procedures with their ongoing instruction of subject content. Students' reading skill levels were tested prior to the application of project-related teaching procedures, and after eighteen weeks students were retested. Test results and evaluations by project teachers indicated that content area teachers can make a significant

contribution to helping students improve their reading skills. Included in the appendix and addendums to the appendix are such items as a teacher training manual, slide-tapes used to instruct teachers, record-keeping forms, test data from project classes, evaluative instruments, and comments by project teachers.

HELPING STUDENTS IMPROVE READING SKILLS

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INTRODUCTION

For the most part, planned instruction for the development of basic reading skills is limited to elementary school programs. Secondary schools may provide some student assistance in this area, but in most instances planned help is limited to a small percentage of the students with the most extreme reading skills problems. Staffing allocations usually limit the number of reading specialists in secondary schools, and few content area teachers knowingly contribute to student growth in this area. This problem tends to be compounded by the fact that most secondary teachers either consider this area of instruction to be someone else's responsibility or fail to realize how they might be able to help students improve their reading skills.

While educators, parents, and lay people in general recognize that many secondary level students have reading problems, there is little agreement on the best way to deal with the problems. Reading specialists indicate that the development of reading skills is an ongoing process that is not limited to planned instruction in the elementary grades. The idea that content area teachers can and should contribute to student skill development is also widely promoted by reading specialists and represents the basic premise of this practicum.

The participants in this group practicum represented three school districts which had established needs for increased reading instruction in the secondary schools. The districts had a limited number of secondary level specialists with no prospect of increased staffing in this area. Recognizing the staffing limitations of the districts

involved, as well as the potential for instructional improvement, the members of this group practicum sought to help students improve their reading skills by helping their content area teachers to use teaching strategies designed to promote such improvement.

Practicum administrators wish to thank Dr. Loren Thompson, Director of Instruction for the Newark School District, and Dr. William J. Cassidy, Newark District Reading Supervisor, for their confidence in the project and for the financial support which made it possible to conduct the teacher training workshops. Appreciation is also extended to Eva Herron and John McGill, reading specialists at Ogletown Middle School and Newark High School respectively, for the direct assistance provided throughout the project.

CHAPTER I

IDENTIFICATION OF NEED

A frequently expressed criticism of educators involves their failure to help many students gain a reasonable level of reading competence. It is well established that many secondary school students do have reading problems which prevent them from deriving maximum benefit from written materials used in classrooms. The fact that secondary education is built around the written word further exacerbates the problem. Deficiencies in reading skills, the use of reading materials inappropriate to the reading level of students, and the complexity of course content all contribute to students' inability to benefit from written information.

Although the reading problem just described is, unfortunately, all too common in schools throughout the country, standardized testing programs at the state and local levels have provided ample evidence that a significant number of students in the Newark School District secondary schools need assistance in improving their reading skills. Results from the Delaware Education Assessment Program, a yearly statewide testing process, repeatedly identified many eighth grade students at Ogletown Middle School with reading levels substantially below their grade level enrollment. Administration of the Gates-MacGinitie Reading Inventory at Newark High School for the past several years also revealed a pattern of many high school students reading well below grade level

enrollment. A summary of test results for the 1975-76 school year, shown in Table 1, provides evidence of the magnitude of this problem.

Table 1

Summary of Gates-MacGinitie Reading Test Results
Newark High School

Grade 1975-76	No. Students with Grade Scores Below 6	6 to 8	9 and Up	Classes Tested
9	36	72	71	All Gen. English
10	22	80	322	All English
11	18	55	296	All English
12	10	32	174	All Gen. English

The incidence of student reading problems at Newark High School and Ogletown Middle School seems to support many studies which directly correlate socio-economic status with student reading levels and achievement. Coleman[1] states, "Poor readers, as a group, come with surprising consistency from families of low socio-economic status." Studies by Heimann, and Schenk[2], Phillips[3], and Venturini[4] also support the apparent

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[1]Coleman, Hubert A., "The Relationship of Socio-Economic Status to the Performance of Junior High School Students," Journal of Experimental Education, Vol. 9, No. 1, September 1940.

[2]Heimann, Robert A. and Quentin F. Schenk, "Relations of Social Class and Sex Differences to High School Achievement," The School Review, Vol. 62, April 1954.

[3]Phillips, Beeman N., "Sex, Social Class, and Anxiety as Sources of Variation in School Achievement," Journal of Educational Psychology, Vol. 53, No. 6, pp. 316-22, 1962.

[4]Venturini, Joseph Lawrence, "Relationships Between Reading Achievement and Some Social Factors," Ed.D. Dissertation, Rutgers University, 1974.

relationship between achievement and socio-economic status. A National Assessment of Educational Progress[5] survey of reading achievement "shows that 20 to 30 percent of the U.S. young people, ages 9, 13, 17, and 26-35, cannot complete satisfactorily various reading tasks that range from understanding words and word relationships to critical reading. This survey of reading ability shows that rural and low metro students score from 2.6 to 14.3 percentage points below the national level." (Most parents of rural students are engaged in farming; most parents of students in the low metro group are not regularly employed or are on welfare.) By contrast, "high metro students (those whose parents hold professional or managerial positions) perform 5.7 to 8.4 percentage points above the national level." On the Delaware statewide assessment tests, grade eight students in Title I programs had a mean score of 38.6 compared to non-Title I students' mean of 50.7. Composite Achievement mean scores were 39.5 for Title I students and 50.3 for non-Title I students. These differences are more than one standard deviation. English, mathematics, science, and social studies sub-scores show similar disparity. In a report to the Delaware State Board of Education[6] the State Supervisor of Research stated that, "According to the analysis (of statewide assessment test data), socio-economic status of the school has a very strong and positive correlation with achievement--.78 of a possible 1.00."

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[5]"Reading Becomes Top Educational Priority," NAEP Newsletter, (Education Commission of the States), Vol. VI, No. 7, September 1973.

[6]"State Tests Reveal High- and Low-Achieving Schools," Board Highlights, (State of Delaware Department of Public Instruction), February 19, 1976.

The Division of Urban Affairs at the University of Delaware had also developed substantial amounts of demographic and other data on the population and characteristics of the Newark School District. Data identifying socio-economic status of heads of households of families with children attending public schools were tabulated for each elementary school attendance area in the Newark District. From the 1975-76 Update Tables, weighted interpolations of these data were made for the Ogletown Middle School and the Newark High School attendance areas. These data revealed that 48.6 percent of the students attending Ogletown Middle School come from homes with below average socio-economic status for the area. Of students attending Newark High School, 23.8 percent come from homes with below average socio-economic status for the area. Since both Ogletown Middle School and Newark High School were the two immediate target schools involved in this practicum, the information was of particular importance in assessing student needs. Further evidence of low socio-economic status families in the Newark schools was indicated by the fact that 16.5 percent of students enrolled in District schools qualified for Title I program support. Another indicator was that 18.2 percent of students enrolled in District schools were eligible for free or reduced-price lunches under the Federal School Lunch Program.

Little comfort was derived from the fact that reading problems in our schools were not unlike those in many other secondary schools. Basic student needs were clearly evident, and it was imperative that everything possible be done to help these students. The challenge was to alleviate the problem to the greatest extent through the most effective utilization of available resources.

CHAPTER II

STRATEGY FOR MEETING THE NEED

The development of reading skills is an ongoing process that occurs over long periods of time. The complexity of this process is suggested by the fact that students exposed to similar experiences in homes and schools often acquire reading skills at different rates and to different degrees. Although reading and writing experiences are generally associated with the development of these skills, the nature of such experiences and the conditions under which they occur are critical factors. There seems to be little doubt that reading skill development occurs under the direction of many teachers who have had little or no formal training in teaching reading.

Recognition that many regular classroom teachers, including those at the secondary level, somehow help students improve their reading skills was a critical factor related to the choice of change strategy. The idea of secondary level content area teachers building the teaching of specific reading skills into their ongoing strategy of teaching has been discussed in the literature for more than fifteen years. Unfortunately, much of this discussion has been in publications such as the Journal of Reading, which are aimed at reading specialists and are seldom read by content area teachers. A search of recent literature generated many expository articles on the idea of teaching reading in the content areas: few of them dealt with actual cases of application.

Articles that did deal with the application of this concept were generally presented as success stories written to encourage other content area teachers to direct specific attention to reading skills instruction in their own teaching strategies.

Inservice teacher education in reading skills and the need for attention to them in content area classrooms is stressed in more recent literature. For example, Osburn[7] outlines the efforts of Fairfax County, Virginia, to heighten the awareness of secondary teachers to the reading needs of their students. Bullerman and Franco[8] outline the staff development approach used in the Hillsborough County Florida Public Schools. They state that:

> The problem seems to stem from the fact that both the remedial and developmental aspects of reading have been taught in isolation, with a sublime faith that skills will be automatically applied to reading tasks in all disciplines. No systematic instruction in reading/study skills suited to various subject areas has been carried out. If secondary and adult students are to be able to complete homework assignments or benefit from classroom instruction, it will be because competent teachers have given instruction and practice in gaining information from the printed page.

The literature emphasizes the role of the content teacher as the primary agent in applying reading skills instruction in the content areas. Sargent[9] holds that:

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[7]Osburn, Bes, "Shock Treatment Inservice Program Adds New Life to Reading," Journal of Reading, Vol. 18, No. 2, November 1974, pp. 122-26.

[8]Bullerman, Mary and E. J. Franco, "Teach Content Material But Teach Reading, Too!" Journal of Reading, Vol. 19, No. 1, October 1975, pp. 21-23.

[9]Sargent, Eileen E., "Integrating Reading Skills in the Content Areas," Fusing Reading Skills and Content, eds. H. A. Robinson and E. L. Thomas (Newark, Delaware: International Reading Association, 1969), pp. 17-25.

> The content area teacher is the best qualified person in the school for teaching reading in his subject. He is the one who (1) is most capable in teaching the new vocabulary in his subject; (2) is most knowledgeable in setting purposes for reading; (3) is most able in developing and motivating student interest; (4) is most adept in identifying important concepts to be arrived at; (5) is most conversant with multiresources, their use, and value in developing background experiences; and (6) is familiar enough with the text to know how best to read and study it.
>
> The content area teacher is, first of all, an expert in his own field. He has developed a vast background of experiences and knowledge over a period of years. He knows the language, the vocabulary, and the concepts of his chosen field better than any reading teacher. He can best make these experiences and this knowledge meaningful to his students. As long as he uses written materials as aids in teaching subject matter, he has an obligation to teach his students how to read that subject matter.[10]
>
> The role of the reading specialist is to teach the skills that are fundamental to all reading of whatever kind. On the other hand, the teacher of a content area should guide his students in the application of basic skills and study methods to the materials used. Thus, the teaching of reading is a responsibility faced by all teachers.[11]

There are known teaching techniques and strategies which are totally compatible with content area teaching that, if used, have the potential to help students improve their reading learning skills. There is some evidence that improvement in reading skills can best be accomplished in content rather than reading classes, since the reading work involved is more relevant to the immediate needs of students. It is obvious that many successful content teachers are knowingly or unknowingly using teaching procedures that do contribute to reading skill development.

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[10]Marksheffel, Ned D., "A Framework for Improvement," Fusing Reading Skills and Content, eds. H. A. Robinson and E. L. Thomas (Newark, Delaware: International Reading Association, 1969), pp. 127-35.

[11]Palmer, William S., "Teaching Reading in Content Areas," Journal of Reading, Vol. 19, No. 1, October 1975, pp. 43-51.

Unfortunately, the development and use of these teaching skills is left largely to chance, since secondary level teachers are seldom required to take a single course which might help them to implement reading skills instruction into teaching procedures. Indeed, there is little in the literature that clearly suggests a process by which content area teachers might acquire the necessary background to apply reading skills within their teaching strategies.

In addition to the points cited in the literature review, there were several other critical factors that influenced the choice of strategy. First, while the literature did not clearly identify procedures for helping content teachers in the desired area, the combined professional talents and responsibilities of the practicum participants were ideally suited to deal with these matters. Secondly, the prospect of employing a sufficient number of reading specialists to work with the large number of students who might conceivably benefit from such instruction was simply not possible. Thirdly, recent teacher workshops at Newark High School had resulted in some promising changes in instructional patterns in English classes where students were known to have reading deficiences. English teachers were saying that teachers in other content areas could also contribute to improving students' reading skills. A total staff inservice program was conducted in the spring of 1976 to describe the teaching procedures and successes of Newark High English teachers and to suggest the potential for contributions by other content teachers. The inservice evaluation results indicated that 38 percent of the content teachers were interested in becoming involved in follow-up activities that could help them adapt their teaching strategies to help students improve their reading skills. This combination

of factors resulted in a decision to implement a change strategy involving the training and utilization of classroom teachers already under contract.

Fifteen teachers representing the content areas of mathematics, science, social studies, and technology would be instructed in classroom procedures designed to help students improve their reading skills. These teachers would then be asked to employ the desired teaching procedures in their classes. In order to evaluate the impact of the new procedures, each of the participating teachers would identify certain classes as project classes. Prior to using the specified teaching procedures with project students, informal tests would be used to determine students' skills in word recognition, reading comprehension, and reading study skills. After using the desired teaching procedures for approximately eighteen weeks, a reassessment of student reading skills would be made. A comparison of pre/post-test results plus a personal evaluation of student performance changes by project teachers would indicate the extent to which the changes in teaching procedures influenced students' reading skills.

CHAPTER III

PROJECT OBJECTIVES

The goal of this project was to help students in selected classes improve their reading study skills and thereby derive greater benefit from written instructional materials used in content classrooms. Since the strategy for achieving this goal was directly related to the use of definite teaching strategies in regular classrooms, it was necessary to help program teachers understand the desired procedures and adapt their instructional activities accordingly. This resulted in the identification of four project components, each having one or more objectives.

Production Component

This component was needed because content teachers need hands-on materials to help them implement teaching strategies designed to improve students' reading skills.

Related objective:

> Resource materials, written and audio-visual, dealing with assessing students' reading skills and strategies for improving these reading skills will be developed and assembled for use by teachers participating in the workshop.

Teacher Training Component

This component was needed because content teachers (1) are seldom trained in helping students improve vocabulary, comprehension, and study

skills, (2) need time to consider new ideas and study materials designed to help them to improve students' reading skills, and (3) need administrative support in their efforts to develop this teaching dimension. Training of teachers was accomplished through participation in a six-day workshop.

Related objectives:

1. Teachers will demonstrate their understanding of how to assess students' skills in word recognition, reading comprehension, and reading study skills by constructing word recognition tests, informal reading inventory tests, and study skill tests for use in project classes. The quality of tests will be judged by participating reading specialists.

2. Teachers will demonstrate their understanding of strategies designed to help students improve their word recognition/vocabulary skills by constructing a list of teaching procedures and activities that can help students improve such skills.

3. Teachers will demonstrate their understanding of strategies designed to help students improve their reading comprehension skills by construction a list of teaching procedures and activities that can help students improve such skills.

4. Teachers will demonstrate their understanding of the PQ4R method by constructing one or more lessons based on this study process.

5. Teachers will demonstrate their knowledge of questioning skills by identifying and writing questions classified as literal, interpretive, critical, assimilative, and creative.

Student Assessment Component

Before teachers applied the teaching strategies to improve students' reading skills, they had to assess the kind of help students needed and the extent to which this help was needed.

Related objectives:

1. Teachers will assess students' abilities in word recognition/vocabulary skills by administering an informal word recognition test to all students involved in project classes.

2. Teachers will assess students' abilities in reading comprehension by administering informal reading inventory tests and/or Cloze procedure analysis to all students involved in project classes.

3. Students' reading study skills will be assessed by (1) testing their understanding of reading assignments prior to and after the teaching of the PQ4R study method, and/or (2) utilizing a student self-evaluation instrument designed to assess reading study procedures prior to and after the teaching of the PQ4R study methods.

Instructional Application Component

Ultimately the goal was to equip students with skills necessary to derive maximum benefit from written materials used in their classes. After completing student assessments, program teachers applied teaching procedures designed to improve students' skills in word recognition, reading comprehension, and reading study techniques.

Related objectives:

1. Having been exposed to experiences designed to improve word recognition/vocabulary skills for a period of eighteen weeks, at least 50 percent of the students will demonstrate growth by earning higher raw scores on informal word recognition post-tests than on pre-tests.

2. Having been exposed to experiences designed to improve reading comprehension skills for a period of eighteen weeks, at least 50 percent of the students will demonstrate growth by earning higher raw scores on informal reading inventory and/or Cloze procedure post-tests than on pre-tests.

3. Having been exposed to the PQ4R study process for eighteen weeks, at least 50 percent of the students

will demonstrate improvement in reading study skills by scoring consistently higher on tests based on reading assignments.

4. Having exposed students to instructional strategies and activities designed to improve their reading skills for a period of eighteen weeks, at least 80 percent of participating teachers will judge their instructional efforts as being worthy of the planning and classroom time devoted to them.

CHAPTER IV

METHODS USED TO ACHIEVE OBJECTIVES

Production Component

Recognizing that the content teachers participating in this project would have little or no background in reading, the first task undertaken was that of developing and assembling appropriate instructional materials. Since all practicum participants were to assist in the production of these materials and play an active role in training participating teachers, it was necessary to devote a series of work sessions to the identification and understanding of the specific instructional strategies and activities to be used. Activities had to have the potential to help students improve their reading skills yet needed to be totally compatible with instructional procedures used by content area teachers. Having identified the body of information to be presented to teachers, attention was next directed at producing written and audio-visual materials for use in the training process. Although a wealth of published information was available in the areas of concern, no single source interrelated the content in the desired way. Since participating teachers would come from a number of content areas, special efforts were directed at adapting written instructional materials to the areas of science, social studies, mathematics, and technology. The final result was the production of an instructional booklet containing the desired content and format. In addition to the booklet, a

series of six slide-tape presentations was made to complement the written information. While the primary intent of the slide-tapes was to instruct teachers, if properly presented, they also had potential for use with students. A description of the slide-tape material is provided on page 128 of the appendix, and all slide-tapes are on file in the Nova University Practicums Library. The booklet titled Programmed Reading Material for Content Areas is included as an addendum to the appendix.

The production component of this project resulted in several important accomplishments. First, the body of information to be presented to teacher participants was now clearly identified. Secondly, this information was available for presentation in written and audio-visual form. Finally, in the process of identifying and assembling the materials, all practicum participants had developed extensive personal knowledge of how content teachers can help students improve their reading skills.

Teacher Training Component

Although instructional materials were designed for use on an individual basis, there were obvious advantages to actively directing the learning activities of teachers. The structure of the training process was a matter of careful consideration. Many hours of work would be required, and there was a real danger that teachers would not become totally involved if they had daily classes to conduct or if the instruction was given over a span of too many weeks. These factors prompted a decision to request District support for an intensive six-day workshop. Prior to writing the workshop proposal, project plans were shared with Dr. John Cassidy, Supervisor of Reading in the Newark School District. His helpful counsel and enthusiasm for the project contributed greatly

to securing District support. A specific workshop proposal was submitted to Dr. Loren Thompson, Director of Instruction, on October 1, 1976. His affirmative response to the proposal provided the financial support needed to involve 17 teachers in the project. A copy of the workshop proposal is included in the appendix on page 80.

Having received approval to involve 17 teachers, it was decided to select 3 classroom teachers from Ogletown Middle School and 12 from Newark High School. In addition, the reading specialist from each school would be asked to participate. Substitute teachers would be hired for participating teachers. A list of prospective teacher candidates was assembled from each school, and teachers were ranked in order of potential for contributing to the project. Criteria for ranking included: (1) teachers had to be teaching in the area of social studies, science, mathematics, or technology; (2) teachers had to be teaching one or more classes containing numerous students with known reading deficiencies (teachers of basic level classes in science, mathematics, and social studies ranked high on the list); and (3) teachers should have previously demonstrated a willingness to try new ideas in teaching. Invitations to participate were extended through direct personal communication. It was important to have participants who were sincerely interested in becoming actively involved. The nature of the workshop and other project activities were carefully explained. Special emphasis was directed at assuring teachers that project activities were not intended to convert them to reading teachers. In addition, project activities would not jeopardize their coverage of content and would be totally compatible with their ongoing instructional procedures. Fortunately, it was not necessary to go beyond the first 15 teachers. All teachers

who were contacted expressed the desire to participate, and many were enthusiastic about the project's potential for improved instruction.

Both project schools had reading specialists whose roles included helping content teachers to work with student reading problems. At Newark High School, the reading teacher had already worked extensively with English teachers to cooperatively adapt instructional materials and activities to the variable reading levels of different classes. An excellent working relationship had been established, and it was now possible to extend this relationship to teachers in other disciplines. If the impact of project experiences was to have an ongoing positive influence on instruction, the building reading specialists would need to become active participants in the project. The involvement of the reading teachers in the workshop and subsequent project activities was calculated to accomplish two things. It was important to have them fully informed of the nature and objectives of the project. Also, their assistance in conducting the workshop and in providing ongoing individual support to participating teachers was critical to the short- and long-range success of the project. The fact that both reading teachers had been consulted on numerous occasions during the project planning stage made their recruitment an easy task. They were excited about the project and were delighted with the opportunity to become actively involved. Table 2 on page 82 of the appendix identifies all teacher numbers and relates them to their content areas and schools.

The teacher training workshop was conducted during November, 1976. Workshop days were scheduled with intervening instructional periods to provide participating teachers the time needed to complete assigned workshop tasks and practice techniques and procedures in their

classrooms. An agenda of daily activities appears on page 83 of the appendix. Workshop activities were directed at helping teachers to (1) learn procedures for assessing the reading skills of students, (2) understand the relationship between classroom inquiry activities and the development of reading skills by students, (3) help students improve their reading study skills, and (4) identify and develop additional classroom strategies and activities designed to promote the improvement of student word attack and reading comprehension skills. The relationship of these activities to the total project was presented through a project overview presented on the first day of the workshop. An outline of this overview appears on page 85 of the appendix.

It is one thing to suspect that a student has a reading problem and quite another to assess the nature of the problem. Although it was not the intent of the workshop to convert classroom teachers into skilled reading diagnosticians, it was deemed necessary to help teachers to understand the general nature and use of related assessment tools. Workshop experiences helped teachers develop proficiency in the construction and use of word recognition tests, informal reading inventories, and the Cloze procedure. Table 3 identifies the intended use of these assessment instruments. Teachers also learned how to use the Fry Readability Formula to determine the reading level of textbooks. While project participants were not expected to utilize all assessment procedures studied, they were expected to use the tests of their choice to identify the word recognition and reading comprehension skills of students in project classes.

Effective questioning techniques by teachers can contribute to improving reading skills of students. Teachers who present

Table 3

Reading Skill Assessment Instruments

Assessment Instrument	Designed to Measure
Individual Word Recognition Test	Word attack skills
Group Word Recognition Test	Word attack skills
Informal Reading Inventory	Reading comprehension skills
Cloze Test	Reading comprehension skills

information so completely that students can grasp the content without doing assigned reading eliminate the need for students to do the reading. Content teachers should recognize that if, following assigned reading, classroom activities include the asking of well-structured content questions, such questions will not only reveal the desired content, but will also help students improve their reading comprehension skills. Since such skill development would be within the context of relevent content materials, it also is more likely to be a meaningful kind of experience. Unfortunately, all too frequently weak inquiry skills on the part of teachers fail to contribute to the development of improved reading comprehension skills on the part of students. Workshop activities helped teachers to understand this relationship as well as the meaning of questioning levels. Teachers had personal experiences in writing and using literal, interpretive, critical, assimilative, and creative questions in connection with actual reading assignments given to their classes.

The use of good study skills frequently exert a positive influence on the development of good reading skills. To

encourage teachers to stress use of good study skills by students, workshop participants were instructed in the nature and application of the PQ4R study process. The acronym for this process refers to the sequence one should follow when studying a reading assignment: preview (P); question (Q); read, reflect, recite, and review (4R). As part of the training experience, teachers constructed one or more lessons in which this study process represented an integral part of the planned lesson. In addition, teachers were asked to teach and provide ongoing reinforcement of this study process to all project classes.

Unlike the predetermined procedures used to help teachers develop questioning skills and gain understanding of an effective study method, it was not deemed desirable to identify a definite list of teaching activities and strategies for improving student word attack and comprehension skills. Instead, it was decided to utilize the professional experiences and creativity of participants. When starting this phase of the workshop, a number of examples of strategies and activities were presented for group analysis. This approach proved to be an effective catalyst and stimulated a group brain-storming session, which resulted in the identification of dozens of potentially productive strategies and activities. Subsequently, the participants discussed all ideas and eventually identified the procedures that held the greatest promise in all or most of the subject disciplines represented. Participants were then sub-divided into content area groups for the purpose of identifying additional procedures apropos to their own content areas. Ultimately teachers would have to decide which procedures were most promising in their own content area, and a variety of choices would tend to increase the frequency of teachers using desired procedures.

Although project teachers were committed to giving pre- and post-tests to measure students' word recognition and comprehension skills, the application of desired instructional procedures (strategies and activities) was the key to improving student skills. To promote the sustained use of desired procedures, teachers were asked to enter into an agreement to keep a running record of specific procedures used to improve students' reading skills. Records were to be kept until May, 1977. In order to simplify the record-keeping process, the most promising instructional procedures were related to the four major areas of instructional emphasis: (1) levels of questioning, (2) development of word attack skills, (3) development of reading comprehension skills, and (4) development of reading study skills. Next to each procedure on the record chart was space to indicate when that procedure was employed. This record-keeping system only required teachers to insert a date on the record sheet whenever a given procedure was used. Teachers who wished to use procedures not included on the record-keeping sheet were encouraged to extend their record to include any other procedures. A list of the most promising instructional procedures included on the record-keeping chart appears below. A copy of the actual teacher agreement and related chart is included in the appendix on page 86.

MOST PROMISING INSTRUCTIONAL PROCEDURES

Levels of questioning:

1. Write out appropriate questions, using all levels, to be asked when teaching a lesson.

2. Have a student record all questions asked by the teacher while teaching a lesson. Analyze the strengths and weaknesses of the questions.

3. Make a tape recording of a lesson. Listen to the tape and analyze the strengths and weaknesses of the questions.

Word attack skills - vocabulary, dictionary, word recognition:

1. As new words are encountered in the daily content study, enter them on the class' new word list and pronounce, define, discuss, and practice their use with the class within the content context.

2. Review the new word list at regular intervals with the class. Conduct a written quiz after each review.

3. Have students use a book glossary or dictionary in class to look up the meaning of all new words as they are encountered in daily lessons. List all new words on the chalkboard, and discuss their meaning and application in the course context.

4. Reteach or review dictionary skills to those students needing additional help utilizing different types of material each time: books, newspapers, encyclopedias, magazines, etc. Select materials appropriate to the unit of study.

Comprehension skills:

1. Prepare a written study sheet for student use with a given reading assignment. Give a short quiz after the assigned reading is done.

2. Prepare a set of written questions designed to help students interpret the major ideas presented in a reading assignment. Give a short quiz on the assigned reading.

3. Conduct a class review of a specific reading assignment. Develop a written review guide sheet for use by the students including information such as topic or question outlines, context clues, new word attack items, etc.

4. Build reading time into the classroom activities with the teacher assisting individual students with reading needs.

5. Work with your class in an oral situation to determine any decoding problems. Keep a tally count of contextual problems encountered.

6. Designate an observer who will tally incidents of contextual problems arising, noting the types

of clues with which the students need help. Help may then be given by the teacher, another student, or the use of a dictionary.

7. Prepare a worksheet using captions (or narrations) from a filmstrip. Delete words from the captions and have students supply them as the filmstrip is shown.

8. While showing a filmstrip, ask students questions about the pictorial part of the frame that will help them to learn to use clues to the meaning of the written part of the frame.

Study skills:

1. Devote the study time needed to thoroughly teach the PQ4R process to all project classes shortly after the conclusion of the workshop.

2. Review and reinforce the PQ4R process with all project classes on a periodic basis.

3. Review student PQ4R notebooks once a week to ascertain that the technique is being used properly.

4. Plan and conduct class lessons using the PQ4R strategy.

These instructional procedures obviously do not represent a comprehensive list of things that could be done to improve the reading skills of students. A sampling of other possibilities identified by project teachers is listed on page 90 of the appendix.

Student Assessment Component

During the two weeks following the workshop, December 6-17, 1976, teachers were asked to identify one or more project classes and use the assessment instruments they constructed in the workshop to measure the word recognition and reading comprehension skills of the students in these classes. The identification of project classes was a cooperative effort in which practicum administrators and project teachers discussed the nature of classes and decided on the number of classes to involve.

When chosen testing procedures required teacher support, as in the case of administering individual word recognition tests, practicum administrators either provided personal assistance or arranged for teacher aides or other teachers to provide assistance. In most cases, however, teachers chose to personally administer tests.

Established testing procedures were not available for the assessment of students' reading study skills. Instead of direct testing, teachers were asked to consider using a student self-assessment procedure. A self-assessment instrument was constructed in which students were expected to give "yes" or "no" responses to a series of six statements. Statements were directly correlated with the PQ4R study guidelines, and "yes" responses to all statements indicated complete utilization of good study habits. "No" responses indicated specific weaknesses in the application of effective reading study procedures. The student self-assessment instrument is included in the appendix on page 95. Teachers were instructed to have project students take this self-assessment prior to teaching them the PQ4R study process. After teaching and providing subsequent reinforcement of this process, the self-assessment procedure could be repeated. Teachers were cautioned against grading students on their responses. If students were not threatened by self-assessment, their responses would more likely be honest and therefore provide teachers with indication of student progress in establishing good reading study procedures. Whereas most teachers reacted favorably to this self-assessment process, several expressed the desire to judge their students differently. Teachers who had already established the practice of giving short daily quizzes whenever reading assignments were given could use already established

grade records for purposes of comparison. They reasoned that if the PQ4R reading study process does help students improve their reading comprehension skills, they should see an improvement in daily quiz grades subsequent to teaching the PQ4R process. A review of what one teacher decided to do will illustrate this assessment procedure. Assessments were made during three four-week intervals. The first four-week interval was the time immediately preceding instruction of PQ4R. Pre-test results were determined by averaging grades earned on daily quizzes during this time interval. The second four-week time interval was used to teach and reinforce the PQ4R process. All other regular activities, including daily quizzes, were conducted during this period of time; but quizzes were not averaged for comparison purposes. Daily quizzes given during the final four-week interval were averaged and compared with student averages recorded during the first time interval.

Instructional Application Component

At the end of the testing period, meetings were arranged with project teachers for the purpose of cooperatively reviewing test results. It was important for teachers to understand that the results would not only identify students with weak word recognition and reading comprehension skills, but should also be used to help them decide on the teaching strategies and activities best suited to meeting the needs of individual students and classes. Appropriate kinds of teaching strategies and activities were discussed for each project class, and initial plans of action were outlined. Plans were directly related to, although not limited to, the utilization of instructional procedures already identified on the record sheet of classroom activities and strategies. Project leaders were now ready to apply instructional

procedures learned in the workshop.

During the application phase of the project, practicum administrators directed attention to monitoring activities and supporting the efforts of project teachers. Original plans included regular observation of classes and periodic meetings with teachers. Individual teacher meetings proved to be the most effective procedure for monitoring ongoing activities, reviewing problems, and providing personal counsel to teachers. Discussion of planned project-related teaching procedures represented the focal point for all such meetings. Either prearranged or informal meetings were held at intervals of no more than three weeks throughout the instructional application period. In addition, total group meetings were conducted at approximately six-week intervals on February 3, March 10, and April 19, 1977. Group meetings were arranged for the purpose of providing general updates on project successes and problems. Although practicum administrators provided brief summaries of project activities, the informal interaction of participants proved to be the most beneficial aspect of these meetings.

Observations of project classes were only done with the prior knowledge and approval of teachers. Due to the varying preferences of teachers, observations could not be scheduled at predetermined intervals. The frequency of observations ranged from a high of seven for one teacher to no observations for four teachers.

Building reading specialists played an important role during the application phase of the project. Their prior assistance to teachers in the training workshop and during the pre-testing process had successfully established them as colleagues with special expertise in reading. Project teachers were strongly encouraged to confer with them at any

time on an informal or scheduled basis. With few exceptions project teachers utilized these resource teachers on a regular basis. The reading specialists reported that 7 of the 12 project teachers arranged for them to provide personal classroom assistance on at least one occasion.

It had been anticipated that project teachers would make many requests for special instructional materials. Funds had been earmarked for such requests. Contrary to expectations, the instructional activities and strategies used by teachers did not exceed the limit of regular funds already budgeted to departments.

In addition to providing an update on project activities, the April 19, 1977, group meeting was used to decide on dates for terminating activities. On the basis of group concensus, May 6, 1977, was identified as the termination date for record keeping; and May 13, 1977, was the target date for completing post-tests. As in the case of the pre-testing process, arrangements were made to provide assistance to teachers who requested help in conducting post-tests.

CHAPTER V

PROJECT EVALUATION

Although there were numerous components involved in the execution of this project, there were only two major phases associated with implementation. Phase one involved the introduction of selected content area teachers to instructional activities and techniques designed to help students improve reading skills. Phase two dealt with the utilization of these classroom procedures by participating teachers. Since achievement of the intended project goal was directly dependent upon the successful execution of both phases, evaluations were conducted for both areas.

Evaluation of Teacher Training Workshop Phase

Following each day of workshop experiences, teachers were asked to give written responses to the following:

1. What was most helpful? Useful? Worthwhile?
2. What are your suggested changes for today's activities?
3. Make any comments you desire.

Teacher responses were reviewed and discussed by practicum administrators and the two reading specialists. This was done immediately following each day's activities, so recall of daily experiences could be clearly related to the evaluative comments. Responses were used to judge the ongoing effectiveness of workshop activities and helped to identify needed improvements in workshop materials and instructional procedures.

A summary of these comments as they relate to the different content areas of the workshop appears on page 96 of the appendix.

At the conclusion of the workshop, teachers were asked to respond to a questionnaire designed to provide a summative evaluation of the total workshop. A copy of this evaluation instrument appears on page 98 of the appendix. Responses to evaluative questions are shown in Tables 4 through 17, beginning on page 30.

Analysis of workshop evaluation by teachers:

Were the workshop objectives clearly identified and understood by teachers? How valuable were instructional aids in helping teachers to understand topics? Did teachers recognize the importance of topics relative to helping students improve their reading skills? Was the workshop well organized? Were workshop objectives accomplished? Answers to these questions must obviously be based on the range of individual perceptions expressed by workshop participants. One can reasonably conclude that generally positive responses to these questions would favorably influence teachers' commitments to use instructional procedures designed to help students improve their reading skills.

During the process of recruiting teachers for the project, it was important to convey the message that while the workshop dealt with the improvement of student reading skills, there was no intent to have them function as reading specialists. On the first day of the workshop, it was necessary to further clarify their roles by explaining the workshop objectives. Each participant had to be aware that the completion of specified workshop tasks was directly related to achieving the desired objectives. The extent to which they understood this is indicated in the first two entries in Table 16. If one recognizes that

Table 4

Ranking Importance of Workshop Areas

Workshop Area	Number of Teachers Ranking Area As 1 Most Important	2	3	4	5	6	7	8 Least Important	*Total Ranking Weight	Rank of Importance
Informal Reading Inventory	0	5	2	1	2	3	1	1	72	3
PQ4R Technique	9	1	1	3	0	0	1	0	102	1
Levels of Questioning	2	4	6	2	1	0	0	0	94	2
Word Recognition	0	2	1	0	3	2	2	5	47	8
Related Activities	3	1	1	4	0	1	1	4	66	4
Fry Readability Formula	0	2	0	1	6	3	0	3	55	6
Cloze Technique	1	2	1	3	2	2	3	1	64	5
Contextual Clues	1	0	4	0	0	3	6	1	54	7

*Total ranking weight is determined by assigning reverse weight to rank (i.e., a rank of 1 has a weight of 8, a rank of 2 has a weight of 7 . . . and a rank of 8 has a weight of 1); and then totaling ranking weight by area. The larger the ranking weight, the higher the rank of importance.

Table 5

Teachers' Perceptions of Time Committed to Workshop Areas

Workshop Area	Number of Teachers Rating The Time Devoted to Each Area As: 5 Too Long	4	3	2	1 Too Short	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	0	7	7	1	0	0	36	60
PQ4R Technique	0	0	12	3	0	0	27	45
Levels of Questioning	0	4	7	4	0	0	30	50
Word Recognition	8	4	3	0	0	0	50	83
Related Activities	0	0	4	3	8	0	11	18
Fry Readability Formula	1	1	12	0	0	1	31	55
Cloze Technique	1	0	10	3	0	1	27	48
Contextual Clues	1	0	7	3	4	0	21	35

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 6

Teaching Effectiveness of Workshop Printed Materials

Workshop Area	The Number of Teachers Rating The Effectiveness of Printed Materials as 5 Very Effective	4	3	2	1 Very Ineffective	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	7	2	3	2	1	0	42	70
PQ4R Technique	9	3	1	2	0	0	49	82
Levels of Questioning	8	6	1	0	0	0	52	87
Word Recognition	8	1	2	1	0	0	40	67
Related Activities	3	2	4	4	2	0	30	50
Fry Readability Formula	5	3	4	1	1	1	38	68
Cloze Technique	7	4	2	0	1	1	44	79
Contextual Clues	3	3	4	2	3	0	31	52

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 7

Teachers' Perceptions of Attractiveness of Workshop Printed Materials

Workshop Area	Number of Teachers Rating The Attractiveness of Printed Materials as 5 Very Attractive	4	3	2	1 Very Unattractive	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	2	1	7	3	2	0	28	47
PQ4R Technique	2	4	6	2	1	0	34	57
Levels of Questioning	3	1	8	2	1	0	33	55
Word Recognition	2	1	7	3	2	0	28	47
Related Activities	4	2	4	4	1	0	34	57
Fry Readability Formula	2	1	6	4	1	1	27	48
Cloze Technique	2	4	5	3	1	0	33	55
Contextual Clues	1	2	7	3	2	0	27	45

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 8

Extent to Which Workshop Printed Materials Were Self-teaching

Workshop Area	Number of Teachers Rating The Self-teaching Potential of Printed Materials as					No Response	Total Rating Weight	*Rating Percent
	5 Completely Self-teaching	4	3	2	1 Needing Extensive Explanations			
Informal Reading Inventory	5	7	1	2	0	0	45	75
PQ4R Technique	7	7	0	1	0	0	50	83
Levels of Questioning	8	5	2	0	0	0	51	85
Word Recognition	6	5	2	2	0	0	45	75
Related Activities	2	5	4	3	1	0	34	57
Fry Readability Formula	7	4	1	2	0	1	44	79
Cloze Technique	8	4	1	1	0	1	47	84
Contextual Clues	4	5	2	2	2	0	37	62

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 9

Extent to Which Workshop Printed Materials Were Clearly Presented

Workshop Area	Number of Teachers Rating The Clarity of Printed Presentations as 5 Very Clear	4	3	2	1 Very Unclear	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	5	6	3	1	0	0	45	75
PQ4R Technique	5	6	2	1	1	0	43	72
Levels of Questioning	5	5	4	0	1	0	43	72
Word Recognition	5	7	2	1	0	0	46	77
Related Activities	3	6	5	1	0	0	41	68
Fry Readability Formula	4	6	3	0	1	1	40	71
Cloze Technique	2	7	4	0	1	1	37	66
Contextual Clues	3	5	5	1	1	0	38	63

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 10

Extent to Which Printed Materials Need Revision

Workshop Area	Number of Teachers Rating Each Area as Needing 5 No Revision	4	3	2	1 Complete Revision	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	5	4	3	1	2	0	39	65
PQ4R Technique	4	7	3	1	0	0	44	73
Levels of Questioning	5	5	2	3	0	0	42	70
Word Recognition	3	4	5	1	2	0	35	58
Related Activities	2	5	4	3	1	0	34	57
Fry Readability Formula	3	7	2	2	0	1	39	70
Cloze Technique	3	5	0	5	1	1	32	57
Contextual Clues	2	4	1	5	3	0	27	45

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 11

Teaching Effectiveness of Workshop Audio-Visual Materials

Workshop Area	Number of Teachers Rating The Effectiveness of Audio-Visual Materials as 5 Very Effective	4	3	2	1 Very Ineffective	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	7	5	1	2	0	0	47	78
PQ4R Technique	7	5	2	1	0	0	48	80
Levels of Questioning	8	3	3	1	0	0	48	80
Word Recognition	6	6	2	1	0	0	47	78
Related Activities (No slide tape)	-	-	-	-	-	-	-	-
Fry Readability Formula	6	3	1	2	1	2	37	71
Cloze Technique	7	4	1	1	1	1	43	77
Contextual Clues (No slide tape)	-	-	-	-	-	-	-	-

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 12

Teacher Perception of Attractiveness of Workshop Audio-Visual Materials

Workshop Area	Number of Teachers Rating The Attractiveness of Audio-Visual Materials as 5 Very Attractive	4	3	2	1 Very Unattractive	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	5	5	3	2	0	0	43	72
PQ4R Technique	4	5	5	1	0	0	42	70
Levels of Questioning	5	5	4	1	0	0	44	73
Word Recognition	4	5	4	2	0	0	41	68
Related Activities (No slide tape)	-	-	-	-	-	-	-	-
Fry Readability Formula	2	6	3	1	1	2	33	63
Cloze Technique	4	5	3	1	1	1	38	68
Contextual Clues (No slide tape)	-	-	-	-	-	-	-	-

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 13

Extent to Which Workshop Audio-Visual Materials Were Self-teaching

Workshop Area	Number of Teachers Rating The Self-teaching Potential of Audio-Visual Materials as					No Response	Total Rating Weight	*Rating Percent
	5 Completely Self-teaching	4	3	2	1 Needing Extensive Explanation			
Informal Reading Inventory	5	6	3	0	1	0	44	73
PQ4R Technique	6	5	4	0	0	0	47	78
Levels of Questioning	6	5	4	0	0	0	47	78
Word Recognition	6	6	3	0	0	0	48	80
Related Activities (No slide tape)	-	-	-	-	-	-	-	-
Fry Readability Formula	4	4	4	0	1	2	36	69
Cloze Technique	5	6	2	0	1	1	42	75
Contextual Clues (No slide tape)	-	-	-	-	-	-	-	-

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 14

Extent to Which Workshop Audio-Visual Materials Were Clearly Presented

Workshop Area	Number of Teachers Rating The Clarity of Audio-Visual Presentations as 5 Very Clear	4	3	2	1 Very Unclear	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	5	7	1	2	0	0	45	75
PQ4R Technique	5	8	1	1	0	0	47	78
Levels of Questioning	5	7	2	1	0	0	46	77
Word Recognition	6	7	1	1	0	0	48	80
Related Activities (Nc slide tape)	-	-	-	-	-	-	-	-
Fry Readability Formula	3	6	2	1	1	2	35	67
Cloze Technique	4	8	1	0	1	1	42	75
Contextual Clues (No slide tape)	-	-	-	-	-	-	-	-

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 15

Extent to Which Audio-Visual Materials Helped Workshop Teachers

Workshop Areas	Number of Teachers Rating The Helpfulness of Audio-Visual Materials as 5 Very Helpful	4	3	2	1 Of no Help	No Response	Total Rating Weight	*Rating Percent
Informal Reading Inventory	2	4	4	5	0	0	33	55
PQ4R Technique	2	5	5	3	0	0	36	60
Levels of Questioning	3	4	4	4	0	0	36	60
Word Recognition	2	5	5	3	0	0	36	60
Related Activities (No slide tape)	-	-	-	-	-	-	-	-
Fry Readability Formula	1	3	4	4	1	2	25	48
Cloze Technique	3	3	2	5	1	1	30	54
Contextual Clues (No slide tape)	-	-	-	-	-	-	-	-

*Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 16

Miscellaneous Workshop Evaluation Ratings

Focus of Evaluation	High Rating Descriptor	Number of Teachers Giving Rating of 5	4	3	2	1	Low Rating Descriptor	Total Rating Weight	*Rating Percent
Explanation of Workshop Objectives	Thorough	3	7	3	2	0	Incomplete	41	68
Awareness of Workshop Objectives	Clear	3	7	3	2	0	Vague	41	68
Length of Total Workshop	Too Long	4	5	4	1	1	Too Short	40	67
Physical Facilities	Suitable	7	3	3	2	0	Unsuitable	45	75
Variety of Activities	Sufficient	4	4	5	2	0	Insufficient	40	67
Objectives Accomplished	To a Great Extent	4	7	4	0	0	Not at All	45	75

* Rating percent is determined by, first, assigning weights to rating responses (i.e., a rating of 5 has a weight of 4, a rating of 4 has a weight of 3 . . . , and a rating of 1 has a weight of 0), then totaling rating weights by area, and dividing the total rating weight by the maximum weight possible. If all 15 evaluators gave a rating of 5 for a given area, the maximum rating weight would be 60. (15 participants x 4 weight = 60 rating weight.) Percentages are rounded to the nearest whole number.

Table 17

Organization of Workshop Topics as Perceived by Teachers

Workshop Topics	Number of Teachers Who Think Topic Should be Studied					
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day
Informal Reading Inventory	4	5	4	1	1	0
PQ4R Technique	1	6	4	5	3	2
Levels of Questioning	3	5	3	1	1	0
Word Recognition	8	2	0	0	0	0
Related Activities	1	1	4	5	5	4
Fry Readability Formula	8	2	1	1	1	0
Cloze Technique	2	5	2	2	2	1
Contextual Clues	0	1	4	3	1	3

Related Data: Three teachers would eliminate word recognition as a topic. Four teachers would reduce the length of the workshop to five days, one would reduce it to four days, and one would increase it to seven days.

a rating of three indicates an average level of understanding, only two teachers had less than an average understanding of the objectives. Similarly, since a rating percentage of 50 would indicate an average level of understanding by all teachers, the 68 percent rating indicates that workshop objectives were clearly explained, and teachers were aware of their related responsibilities.

Special printed and audio-visual materials were developed as important instructional aids for the workshop. In addition, these materials were designed for self-instructional use and represented a body of information that could be used to disseminate project information to other interested educators. The extent to which these materials served as workshop instructional aids is indicated by the teacher evaluation responses tabulated in Tables 6 through 15. Table 6 data indicates that the teaching effectiveness of the printed material was well above average. Most workshop areas received ratings of 67 percent or higher. Only the areas of contextual clues and related activities received average ratings. The attractiveness of printed materials received ratings from 45 to 59 percent, indicating average quality. Ratings of 63 to 77 percent on the clarity of printed materials, as shown in Table 9, indicates that while the appearance of printed material was considered average, the subject content was clearly presented. Evaluation of the self-teaching potential of printed materials was particularly gratifying. Table 8 data shows that, with one exception, all areas received ratings of 62 to 85 percent. The slightly lower rating of 57 percent for related activities can be attributed to the deliberate intent to have workshop teachers identify activities through a process of group interaction. A predetermined, printed list

of activities might not have been as meaningful as activities generated by the workshop teachers. Table 10 indicates that printed information in four of the eight workshop areas received ratings of 65 to 73 percent and therefore required little, if any, revision. The remaining four areas (word recognition, related activities, Cloze technique, and contextual clues), with slightly above or below average ratings, were the target areas for revision. Teacher evaluation of the audio-visual materials was uniformly high. Participants generally considered the slide-tape presentations very attractive. Lessons were clearly and effectively presented, and the potential to use the slide-tapes as aids to self-teaching was considered great. Ratings of 63 to 80 percent in Tables 11 through 14 support these conclusions. In contrast, the data in Table 15 indicates that teachers rated the helpfulness of audio-visual materials as only average. The apparent contradiction between the high rating for slide-tape quality and lower rating for helpfulness can be explained by the fact that slide-tapes were primarily used to introduce and summarize workshop topics. The thoroughness of related printed materials and the extent to which topics were discussed in the workshop tended to lessen the potential helpfulness of the audio-visual materials.

Teachers' perceptions of the relative importance of workshop areas varied considerably as shown in Table 4. The PQ4R reading study technique and levels of questioning were clearly identified as areas of greatest importance by most participants. Informal reading inventories, related activities, and the Cloze technique were ranked third, fourth, and fifth respectively in relative importance. Of the remaining three areas, only word recognition had a ranking weight of less than 50 and

was therefore identifiable as the area of least importance. The fact that each area was identified by three or more people as one of their top three choices suggests the generally high level of all workshop areas. When given the opportunity to make suggestions for reorganizing future workshops, teachers were free to recommend the deletion of any area. Three people recommended the deletion of the word recognition area, but all other areas were included by all teachers. This provides strong evidence that teachers did recognize the importance of workshop study areas.

The organization of the workshop as perceived by teachers is shown in Tables 5, 16, and 17. A rating of 67 percent for the length of the total workshop indicates the workshop was a little too long for most participants. Data in Table 5 specifically identifies the time devoted to the word recognition and informal reading inventory areas as too long. In contrast, the areas of related activities and contextual clues were identified as needing more time. Although teacher opinions varied considerably, Table 17 data suggest a general pattern for studying workshop topics. Informal reading inventories, levels of questioning, Fry readability, and word recognition were identified as topics to cover early in the workshop. Contextual clues, PQ4R, and Cloze techniques were next recommended for coverage; and related activities were recommended for coverage during the latter part of the workshop. This sequence does not contrast greatly from the sequence actually used. These evaluative responses, plus ratings of 75 percent for physical facilities and 67 percent for the variety of activities used during the workshop, suggest the workshop was considered well organized.

When questioned on the extent to which workshop objectives were accomplished, all teachers responded with an average or above rating. A total rating percentage of 75, as shown in Table 16, indicates a high level of success in the workshop training component of the project. Other evaluative comments by teachers relative to workshop experiences appear on page 103 of the appendix.

Evaluation of Application Phase

Throughout the application of classroom treatment, project teachers and practicum administrators met on a regular basis to assess the effectiveness of the treatment being applied and to modify instructional procedures accordingly. These evaluation activities were intentionally designed to be nonobtrusive and informal. Since the primary intent of these meetings was to help teachers follow through on a variety of desired classroom activities, knowledge that such activities were becoming an integral part of the instructional process represented favorable evaluative feedback. The overall impact of activities on student performance would eventually be judged in a more formal, summative evaluation. Although the three practicum administrators located in project schools conducted the individual teacher meetings, all practicum administrators met at four-week intervals to discuss project developments and assess the general effectiveness of project activities. This procedure proved to be very effective for monitoring and influencing project developments, yet eliminated the need for placing specific evaluative demands on project teachers.

The most significant measure of project success should be based on the extent to which students have been helped. Administering of

pre- and post-tests in identified reading skill areas represented a direct attempt at measuring changes in students' skill levels; but there were recognized limitations to this evaluative approach. First, none of the tests were designed as, nor intended to be, precise measuring indications of student skill levels. Secondly, it was recognized that changes in reading skills occur gradually over rather long periods of time. One could not be certain that the eighteen-week application period would provide sufficient time to record measurable changes with the testing instruments being used. Because of this potential limitation, a second indication of changes in student skills was secured through evaluations by project teachers. If teachers observed improved student performance, and related such performance to project strategies and activities, indirect evidence of skill development would be provided. With this in mind, teachers were asked to assess project activities by completing a project evaluation instrument. Inquiries were aimed at determining if student performance improved in project classes and if teachers related improvement to project strategies and activities. Other inquiries were designed to indicate how project experiences were likely to influence the future teaching efforts of project teachers. The combined results of students' performance in reading skill tests and teacher perceptions of the value of project activities and strategies provided the data for the summative evaluation of the project.

Analysis of student test data:

Table 18 (page 49) identifies the pre- and post-tests used by project teachers when assessing skills in different classes.

Table 18

Pre/Post-Tests Administered by Project Teachers

Teacher Number	Class	Section	Tests Used											
			IWR		GWR		IRI		Cloze		RSA		RSS	
			Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Geometry One	1	x	x					x	x	x	x		
1	Geometry One	2	x	x					x	x	x	x		
2	Elementary Algebra												x	x
3	Mathematics		x	x			x	x					x	x
4	Algebra One				x	x			x	x				
4	Business Math				x	x	x	x						
5	Fund.of Agriculture				x	x			x	x	x	x		
5	Horticulture				x	x	x	x			x	x		
6	Television Production		x	x			x	x			x	x		
6	Fund.of Television	1	x	x			x	x			x	x		
6	Fund.of Television	2	x	x			x	x			x	x		
7	Social Studies I	1			x	x			x	x	x	x		
7	Social Studies I	2			x	x			x	x	x	x		
8	Social Studies II		x	x			x	x			x	x		
8	Social Studies III		x	x					x	x	x	x		
9	U.S. History	1			x		x	x			x	x	x	x
9	U.S. History	2			x		x	x			x	x	x	x
9	U.S. History	3			x		x	x			x	x	x	x
10	Social Studies	1			x	x			x	x			x	x
10	Social Studies	2			x	x			x	x			x	x
11	U.S. History	1			x		x	x					x	x
11	U.S. History	2			x		x	x					x	x
11	U.S. History	3			x		x	x					x	x
12	Science (4 Sections)				x	x			x	x			x	x
13	Biology 10		x	x					x	x	x	x		
14	Biology 10	1	x	x					x	x	x	x		
14	Biology 10	2	x	x					x	x	x	x		
15	Biology 10	1			x				x	x	x	x		
15	Biology 10	2			x				x	x	x	x		

Key: IWR - Individual Word Recognition
GWR - Group Word Recognition
IRI - Informal Reading Inventory
Cloze - Cloze Test
RSA - Reading Study Skills Self-Assessment
RSS - Reading Study Skills Content Test Results

Starting on page 105 of the appendix, Tables 19 through 33 show students' test results for all project classes. Data in these tables identify pre- and post-test changes in (1) students' scores, (2) average class test scores, and (3) student performance levels. A synthesis of these data, as shown in Tables 34 through 38 (page 51), provides evidence of changes in student skill levels.

Before analyzing the test data in specific terms, a number of general comments will complement the analysis. Although fourteen of the content area teachers administered the recommended tests, one mathematics teacher rejected the idea of testing for reading skills. Since the algebra text he was using required a minimum number of actual reading assignments, he questioned the need for such testing. He did, however, utilize many of the recommended teaching procedures and did compute averages for pre- and post-testing of subject content. In fairness, it should be stated that other project teachers agreed that due to the nature of many mathematics textbooks, testing for reading skills was least adaptable to this area.

Earlier mention was made of the informal nature of project tests. When constructing word recognition, Cloze, and informal reading inventory tests, most teachers chose to give a post-test that was different from the pre-test. The fact that both pre- and post-tests were taken from the same textbook made this procedure acceptable, since one assumes that textbooks are written at relatively uniform reading levels. Unfortunately, not all textbooks are uniformly written, and this can adversely affect testing accuracy. A pre-test constructed from an easy-to-read section of a book, followed by a post-test constructed from a difficult section of the book may result in lower test scores even though students'

Table 34

Summary of Changes in Student Word Recognition Skills
Based on Pre/Post-Test Scores

Teacher Number	Class	Section	Test Used	No. of Students Tested	Students With Increased Post-Test Scores	
					Number	Percentage
1	Geometry One	1	IWR	22	16	73
1	Geometry One	2	IWR	24	18	75
*2	Elementary Algebra		-	-	-	-
3	Mathematics		IWR	25	13	52
4	Algebra One		GWR	16	8	50
4	Business Math		GWR	12	4	33
5	Fund. of Agriculture		GWR	11	9	82
5	Horticulture		GWR	14	10	71
6	Television Production		IWR	11	0	0
6	Fund. of Television	1	IWR	20	7	35
6	Fund. of Television	2	IWR	17	7	41
7	Social Studies I	1	GWR	23	12	52
7	Social Studies I	2	GWR	23	20	87
8	Social Studies II		IWR	22	22	100
8	Social Studies III		IWR	18	18	100
9	U.S. History	1	GWR	23	7	30
9	U.S. History	2	GWR	21	5	24
9	U.S. History	3	GWR	24	0	0
10	Social Studies	1	GWR	26	9	35
10	Social Studies	2	GWR	22	9	41
11	U.S. History	1	GWR	**	-	-
11	U.S. History	2	GWR	**	-	-
11	U.S. History	3	GWR	**	-	-
12	Science (4 Sections)		GWR	82	50	61
13	Biology 10		IWR	23	13	57
14	Biology 10	1	IWR	19	15	79
14	Biology 10	2	IWR	29	14	48
15	Biology 10	1	GWR	**	-	-
15	Biology 10	2	GWR	**	-	-
	TOTALS			527	286	54

Key: IWR - Individual Word Recognition -- GWR - Group Word Recognition

*Teacher did not give word recognition tests.

**All students scored very high (90% and up) on pre-test, so no post-test was given.

-Percentages rounded to nearest whole number.

Table 35

Summary of Changes in Student Reading Comprehension Skills Based on Pre/Post-Test Scores

Teacher Number	Class	Section	Test Used	No. of Students Tested	Students With Increased Post-Test Scores	
					Number	Percentage
1	Geometry One	1	Cloze	21	10	48
1	Geometry One	2	Cloze	22	7	32
*2	Elementary Algebra		-	-	-	-
3	Mathematics		IRI	25	5	20
4	Algebra One		Cloze	17	11	65
4	Business Math		IRI	**	-	-
5	Fund. of Agriculture		Cloze	11	9	82
5	Horticulture		IRI	15	11	73
6	Television Production		IRI	11	1	9
6	Fund. of Television	1	IRI	20	14	70
6	Fund. of Television	2	IRI	18	12	67
7	Social Studies I	1	Cloze	24	20	83
7	Social Studies I	2	Cloze	23	18	78
8	Social Studies II		Cloze	23	14	61
8	Social Studies III		IRI	17	12	71
9	U.S. History	1	IRI	23	19	83
9	U.S. History	2	IRI	20	15	75
9	U.S. History	3	IRI	23	18	78
10	Social Studies	1	Cloze	27	18	67
10	Social Studies	2	Cloze	22	9	41
11	U.S. History	1	IRI	19	16	84
11	U.S. History	2	IRI	13	11	85
11	U.S. History	3	IRI	18	14	78
12	Science (4 Sections)		Cloze	97	62	64
13	Biology 10		Cloze	20	15	75
14	Biology 10	1	Cloze	20	16	80
14	Biology 10	2	Cloze	25	9	36
15	Biology 10	1	Cloze	19	9	47
15	Biology 10	2	Cloze	24	15	63
	TOTALS			617	390	63

Key: IRI - Informal Reading Inventory

*Teacher did not give reading comprehension tests.

**Class reacted negatively to Cloze pre-test and teacher considered the pre-test scores invalid.

-Percentages rounded to nearest whole number.

Table 36

Summary of Changes in Students' Reading Study Skills
Based on Pre/Post-Test Scores

Teacher Number	Class	Section	Test Used	No. of Students Tested	Students With Increased Post-Test Scores	
					Number	Percentage
1	Geometry One	1	SSA	26	21	81
1	Geometry One	2	SSA	24	20	83
2	Elementary Algebra		CT	25	13	52
3	Mathematics		CT	28	10	36
4	Algebra One		*	-	-	-
4	Business Math		*	-	-	-
5	Fund. of Agriculture		SSA	12	11	92
5	Horticulture		SSA	16	14	88
6	Television Production		SSA	13	7	54
6	Fund. of Television	1	SSA	22	14	64
6	Fund. of Television	2	SSA	18	12	67
7	Social Studies I	1	SSA	25	12	48
7	Social Studies I	2	SSA	24	15	63
8	Social Studies III		SSA	18	10	56
8	Social Studies II		SSA	23	14	61
**9	U.S. History	1	SSA	23	18	78
			CT	23	16	70
**9	U.S. History	2	SSA	21	17	81
			CT	21	14	67
**9	U.S. History	3	SSA	24	19	79
			CT	24	19	79
10	Social Studies	1	CT	28	21	75
10	Social Studies	2	CT	24	14	58
11	U.S. History	1	CT	19	13	68
11	U.S. History	2	CT	14	12	86
11	U.S. History	3	CT	19	12	63
12	Science (4 Sections)		CT	108	65	60
13	Biology 10		SSA	21	12	57
14	Biology 10	1	SSA	23	13	57
14	Biology 10	2	SSA	29	16	55
15	Biology 10	1	SSA	20	12	60
15	Biology 10	2	SSA	24	18	75
	TOTALS			739	484	65

Key: SSA - Student Self-Assessment -- CT - Content Testing

*Teacher did not give skill tests in this area.

**Teacher Number 9 used both testing procedures in each of three classes. When calculating totals for these classes, both sets of data were used.

-Percentages rounded to nearest whole number.

Table 37

Summary of Student Performance Level Changes
in Word Recognition Skills
Based on Pre/Post-Test Scores

Teacher Number	Class	Section	No. of Students Tested	Number of Students Functioning at Frustration Level on Pre-Test	Post-Test
1	Geometry One	1	22	0	0
1	Geometry One	2	24	7	2
*2	Elementary Algebra		-	-	-
3	Mathematics		25	17	14
4	Algebra One		16	1	1
4	Business Math		12	1	1
5	Fund. of Agriculture		11	7	3
5	Horticulture		14	5	2
6	Television Production		11	0	0
6	Fund. of Television	1	20	0	0
6	Fund. of Television	2	17	1	0
7	Social Studies I	1	23	17	13
7	Social Studies I	2	23	16	14
8	Social Studies II		22	8	6
8	Social Studies III		18	11	6
9	U.S. History	1	23	0	0
9	U.S. History	2	21	0	0
9	U.S. History	3	24	0	0
10	Social Studies	1	26	14	9
10	Social Studies	2	22	8	5
11	U.S. History	1	19	0	**
11	U.S. History	2	13	0	**
11	U.S History	3	18	0	**
12	Sciene (4 Sections)		82	28	21
13	Biology 10		23	1	0
14	Biology 10	1	19	7	5
14	Biology 10	2	29	4	5
15	Biology 10	1	20	0	**
15	Biology 10	2	24	1	**

*Teacher did not give word recognition tests.

**Word recognition post-tests were not given.

Table 38

Summary of Student Performance Level Changes
in Reading Comprehension Skills
Based on Pre/Post-Test Scores

Teacher Number	Class	Section	No. of Students Tested	Number of Students Functioning at Frustration Level on Pre-Test	Post-Test
1	Geometry One	1	21	4	3
1	Geometry One	2	22	3	2
*2	Elementary Algebra		-	-	-
3	Mathematics		25	19	16
4	Algebra One		17	3	1
4	Business Math		13	-	7
5	Fund. of Agriculture		11	4	3
5	Horticulture		15	2	2
6	Television Production		11	0	2
6	Fund. of Television	1	20	2	2
6	Fund. of Television	2	18	5	2
7	Social Studies I	1	24	20	16
7	Social Studies I	2	23	17	12
8	Social Studies II		23	7	5
8	Social Studies III		17	8	6
9	U.S. History	1	23	2	2
9	U.S. History	2	20	2	1
9	U.S. History	3	23	1	1
10	Social Studies	1	27	17	9
10	Social Studies	2	22	3	2
11	U.S. History	1	19	7	4
11	U.S. History	2	13	5	3
11	U.S. History	3	18	10	8
12	Science (4 Sections)		97	42	31
13	Biology 10		20	3	2
14	Biology 10	1	20	8	6
14	Biology 10	2	25	9	10
15	Biology 10	1	19	8	6
15	Biology 10	2	24	7	5

*Teacher did not give reading comprehension tests.

skills have improved. The reverse could also occur. This limitation on the preciseness of the tests may account for the few extremes in data variance. This also indicates that the total test change pattern is far more significant than the few extremes in performance changes, either up or down, by single classes of students.

Finally, one must understand that tests were designed to reveal a student's ability to use a given text; not to measure his reading grade level. Students with poor reading skills may perform very well on a test constructed from a textbook written below their reading grade level. Conversely, students will perform poorly on a test constructed from a textbook written above their reading grade level. This emphasizes the importance of carefully equating the readability of textbooks to the reading levels of the students using them.

The extent to which students improved their word recognition skills is shown in Table 34. Of 527 students tested, 54 percent had increased post-test scores. In 13 of the 23 classes, 50 percent or more of the students showed increased post-test scores. There were several classes where extreme score changes were recorded. The 100 percent improvement in the Social Studies II and III classes of Teacher 8 most likely result from extreme variation in test difficulty. In contrast, the unusual reduction in post-test scores, recorded in Teacher 9's Television Production class and in all of Teacher 9's classes, is misleading and can be explained without speculation. In each of these classes, students scored uniformly high on pre-tests, indicating that the reading grade level of the textbook was generally below that of the students. The average pre-test score in the Television Production class was 97 percent. In the three U.S. History

classes of Teacher 9, the average pre-test scores were 94, 95, and 100 percent. These unusually high scores made it very difficult to show improvement even though student performance on post-tests was also uniformly high. In Teacher 9's third section of U.S. History, the percentage of students increasing their post-test scores was zero, even though all students scored 100 percent on both pre- and post-tests. The classes of Teachers 11 and 15 also showed very high pre-test averages, so they decided a post-test was not needed. If the extreme scores were not considered in assessing changes, the number of students with increased post-test scores would be higher than 54 percent. Test score data do not show significant differences among classes in the four subject areas. Students of middle school teachers (numbers 3, 10, and 12) had test score results similar to students in high school classes.

Changes in student reading comprehension skills are indicated by data shown in Table 35. Of 617 students tested, 63 percent had increased post-test scores. In 20 of the 27 classes tested, 50 percent or more of the students showed increased scores. The very low percentage of students showing increased scores in Teacher 6's Television Production class was probably caused by two factors. First, the average score of 84 percent on the pre-test was relatively high. Secondly, the complexity of the written information in the textbook being used was known to vary considerably in different parts of the book. A similar explanation cannot be used for the rather low percentage of students who improved their post-test scores in Teacher 14's second section of Biology 10. The textbook for this class was uniformly written and was used by other Biology 10 classes. In addition, the average score of 45 percent on the Cloze pre-test was relatively low. The fact that

80 percent of the students in this teacher's other section of Biology 10 improved their post-test scores raises additional questions about the validity of this test. Only 39 percent of the students in mathematics classes increased their post-test scores. This percentage is significantly lower than the 63 percent increase recorded for all students tested and probably reflects a very real problem when trying to use mathematics textbooks for testing reading comprehension skills. The absence of long reading passages and the patterned organization of content in many mathematics books make it difficult to construct good Cloze and informal reading inventory tests. The mathematics teachers did identify this as a problem, and it may account for the decreased number of improved post-test scores among mathematics students. Teacher 4's Business Math class, although not included in the data, is a good example of this problem. The informal reading inventory constructed for the pre-test involved a series of questions which required students to read and interpret two lengthy word problems. Students reacted so negatively to this assessment test that some refused to try. Of those that did try, none scored above 10 percent. The teacher concluded that the test was not valid. The post-test for this class was structured in a more conventional way, and an average percentage score of 64 represented good student performance. Test score data do not show significant differences among the classes in the other three subject areas, and the students of middle school teachers had test score results similar to students in high school classes.

Measurement of changes in reading study skill levels was accomplished through indirect means. In the student self-assessment process, students judged their own reading study skill level before and

after being exposed to the PQ4R study technique. The pre-test, in the form of a questionnaire shown on page 95 of the appendix, simply asked students to identify how many of six reading study procedures they routinely used. The post-test, given after teaching and reinforcing the PQ4R study technique, was a repeat of the same inquiry. If, on the post-test, a student indicated he was using more of the six reading study procedures than at the time of the pre-test, his skill level was considered increased. The content testing process was equally indirect and involved the averaging of two series of content quizzes based on assigned reading. The average of a series of quizzes (pre-test) given before the teaching and reinforcing of the PQ4R technique, was compared with the average of a series of quizzes (post-test) given after the teaching of the PQ4R technique. Increased post-test averages indicated an improvement in reading study skills. Table 36 shows that of 739 students tested, using one or both of these procedures, 65 percent of the students had increased post-test scores. Of the 27 classes tested, only one class had less than 50 percent of the students score higher on post-tests than pre-tests. Test score data do not show significant differences among classes in the four subject areas, and the test scores of middle school students were similar to those of high school students. One mathematics teacher recognized little value in this testing process and, therefore, was not required to do the testing.

Whereas Tables 34 and 35 show student scores on word recognition and reading comprehension tests, the data do not explain the meaning of test scores. Interpreting individual and class test scores was of obvious importance to project teachers, since this was the basis for determining the treatment a given class was to receive. Individual and

group word recognition tests were interpreted according to the following scale:

Percent Score	
95 - 100	Independent level; student is capable of working with more difficult reading material.
75 - 94	Instructional level; student is able to handle the reading material adequately.
Below - 74	Frustration level; student needs special help, since the reading material is too difficult for his reading level.

A similar scale has been established for Cloze tests:

Percent Score	
57 - Higher	Independent reading level.
44 - 57	Instructional reading level.
Below - 43	Frustration reading level.

An informal reading inventory test consists of 26 to 30 questions which are designed to measure reading skills in 8 or 9 areas. Examples of reading skill areas include (1) using parts of the book, (2) noting the main idea, and (3) drawing conclusions. Three to four questions are asked in each skill area, and more than one error in a given area indicates frustration in that area. Table 37 data identify the classes in which large numbers of students were functioning at the frustration level with regard to their word recognition skills. The data also show that of the 154 students who were functioning at the frustration level at the time of pre-testing, 47 progressed beyond the frustration level at the time of post-testing. Data in Table 38 show a similar pattern with regard to reading comprehension skills. Of the 218 students who were functioning at the frustration level at the time of pre-testing,

107 progressed beyond the frustration level at the time of post-testing. It is also obvious that frustration level deficiencies were far more prevalent with respect to reading comprehension skills than for word recognition skills.

Analysis of project evaluation by teachers:

After terminating records of project activities in May, 1977, project teachers assessed their total project experience. Eight inquiries, in the form of a project evaluation instrument, were designed to answer a number of very important questions. To what extent would project teachers continue to help students with reading skills development? Did teachers identify a relationship between student performance and project activities? To what extent did the training workshop influence teaching procedures used by teachers? Did teachers have personal reactions or recommendations regarding their project experiences?

Project evaluation inquiries are presented below. The first five required check responses, and the figures in the check spaces indicate the number of teachers checking a given response. Responses to the last three inquiries have been summarized on page 119 of the appendix. A copy of the evaluation instrument appears on page 121 of the appendix.

Evaluation Inquiries

1. As a result of your project experiences, please check the response below that best describes the extent to which you will continue to assist students with reading skills development.

   __0__ I will provide little or no assistance; it's really not my job.

1 I will provide some assistance, but not on a regular basis.

10 I will provide some assistance on a regular basis.

4 I will provide extensive assistance on a regular basis.

2. Please check any (or all) of the following skills development areas which you will continue to emphasize in your teaching strategies and procedures.

11 Questioning Skills

9 Word Attack Skills

13 Comprehension Skills

13 Study Skills

3. To what extent did the subject area performance of project students change during the application phase of this project? Please check the most appropriate response.

1 The performance level of most students decreased.

4 The performance level of most students remained unchanged.

10 The performance level of most students improved.

4. If the performance level of most project students improved during the application phase of this project, to what extent do you relate the improved performance to project strategies and activities? Please check the most appropriate response.

2 Improvement had little, if any, relationship to project activities and strategies.

11 Improvement was partially due to project activities and strategies, but other factors were also significant.

2 Project activities and strategies were the most significant factors influencing improved student performance.

5. Immediately following the workshop you had some definite feelings about the potential value of the workshop. How do you now feel about the workshop experiences in light of your actual involvement in the project over the past five months? Please check the most appropriate response.

0 The workshop was of no value, and it has not influenced my teaching procedures.

2 The workshop was of little value, but it did influence my teaching procedures slightly.

10 The workshop was a good experience and has had a definite influence on my teaching procedures.

3 The workshop was a very rewarding experience that has greatly influenced my teaching procedures.

6. If you were to be involved in a future workshop related to reading in content areas, what additional needs would you like to see addressed? Please comment.

7. Considering all of your project experiences, do you now feel that other content teachers should become involved with helping students to develop better reading skills? Please comment.

8. Please make any comments that may not have been mentioned that will help us to know your feelings about the workshop, related classroom experiences, or the whole field of helping students with reading skill development.

Responses to inquiry number two indicated most project teachers will continue to emphasize instruction in most skill development areas. Sixty percent of the teachers will continue to emphasize word attack skills; 73 percent will continue to emphasize questioning skills; and 87 percent will continue to emphasize comprehension and study skills. Inquiry number one indicates that 93 percent of the teachers will continue to provide some or extensive student assistance on a regular basis. Sixty-six percent of the teachers indicated that the performance level of most students improved during the application phase of the project. Only one teacher noted a decrease in performance by most students. Eighty-seven percent of the teachers recognized project experiences as a significant factor contributing to improved student performance. With the exception of two teachers, participants indicated that the training workshop was a good experience and had a definite

influence on the teaching procedures they now use in their classrooms. Comments made in response to inquiry number seven indicated an almost unanimous feeling that other content teachers should become involved in helping students to improve their reading skills. Responses to all inquiries indicate that, with one or two possible exceptions, participants had valuable professional experiences worthy of the planning and classroom time devoted to them.

Project side effects:

At the beginning of the project, participating teachers were well aware that many of their students had reading deficiencies. They had access to reading test scores, which identified student reading grade levels; but they lacked an understanding of the nature of skill deficiencies which result in below grade level reading scores. Their response to such deficiencies had consisted primarily of compensating for such problems rather than personally helping students with them. Project experiences were designed to establish an awareness of skills related to reading proficiency and the realization that teachers do not have to be reading specialists to help many students improve their skills. Evaluative responses by teachers indicate that project experiences had convinced them of their potential to help students. In addition, they developed an almost unanimous feeling that other content teachers should become actively involved in helping students improve their reading skills. This feeling represented a positive side effect, which would undoubtedly influence other teachers to consider involvement. Although it is difficult to measure quantitatively, another very important side effect resulted from the project. As teachers became

more knowledgeable of how reading deficiencies influence student behavior, they developed greater empathy towards such students. Both written and spoken comments indicated an increased concern for students with reading problems. Although many students recognize their reading skill limitations, they are seldom willing to openly acknowledge their existence. They do, however, appreciate and respect teachers who recognize their weaknesses and work constructively with them to improve. A better understanding of reading problems resulted in greater empathy for students, and in turn, led to a more personal working relationship with students.

Achievement of Project Objectives

A total of 13 objectives were identified in connection with this project. The successful achievement of each objective was directly related to reaching the desired project goal of helping students improve their reading skills in content area classrooms. The teacher training manual and the six slide-tapes represent the resource materials produced in connection with the production component objective. The five objectives related to the content teacher training component called for the construction of tests and instructional materials by project teachers. The first of these objectives involved the construction of word recognition, informal reading inventory, Cloze, and study skill tests for project classes. All tests produced during the workshop were reviewed by the reading specialists, and many of the tests were used in project classes. Table 18 on page 49 identifies the specific tests that were constructed and used by each of the project teachers. The next two objectives involved the identification of teaching activities and

procedures to help students improve their word recognition and reading comprehension skills. All ideas generated by teachers were subjected to group review, and the most promising ideas were incorporated into the Record of Classroom Activities/Strategies (page 87 of the appendix), which was used by all teachers throughout the application time of the project. The last two objectives of this component involved the construction of lessons based on the PQ4R study process and the writing of questions of different levels. Teachers not only completed this work as part of the workshop experiences, but also identified these activities for inclusion in the Record of Classroom Activities/Strategies. Many project teachers, therefore, repeated these activities when planning lessons during the application time of the project. The three objectives related to the student assessment component involved the administering of tests or the use of student self-evaluation instruments. Again, Table 18 identifies the tests administered by project teachers. The last five objectives were related to the instructional application component of the project and involved an assessment of student and teacher change. Analysis of student test score data has already indicated that the four student performance objectives were achieved. The remaining objective called for at least 80 percent of the participating teachers to judge their special instructional efforts as being worthy of the time devoted to them. The analysis of teacher evaluation responses to the total project provided convincing evidence that this objective was also achieved.

CHAPTER VI

INSTITUTIONALIZATION OF PROGRAM AND DISSEMINATION OF INFORMATION

Immediately following the teacher training workshop in November, 1976, project teachers at Newark High School and Ogletown Middle School began to integrate project activities with ongoing classroom instruction. Although testing and activity records were only maintained for project classes, teachers were encouraged to use project ideas in their other classes as well. Evaluative responses from teachers indicated that project experiences have effected permanent changes in their teaching procedures. In addition, most of these teachers have become vocal proponents of similar experiences for other teachers.

Resources needed to implement reading programs of this kind are primarily related to the cost of conducting a teacher training workshop. The cost of duplicating the printed and audio-visual instructional materials produced for this project is well within ordinary budget limits of most schools. In contrast, expenses due to the employment of substitute teachers or for the direct payment of project teachers during a summer workshop can be very great. In this project approximately $2,500 was spent for substitute teachers during the six-day workshop. It is unlikely that the cost of a summer workshop involving the same number of teachers and the same amount of time would be any less.

All teacher training materials produced for the workshop were reviewed and revised based on evaluative feedback from teacher

participants. The self-study design was maintained in order to minimize the need for special resources and personnel and to maximize the potential to disseminate project materials to other interested educators. Reading specialists played a direct role in disseminating program information throughout the Newark School District. Fliers describing the nature of the program were given to all secondary reading specialists for distribution to interested secondary teachers. A sample flier appears on page 123 of the appendix. Teacher training manuals were also distributed to secondary level reading specialists. The two reading teachers who had participated in the project assumed responsibility for contacting other secondary level reading specialists in order to provide a more complete explanation of program activities. They also offered their assistance if reading specialists in other schools decided to conduct similar teacher training workshops.

In April of 1977 it was decided to submit a second workshop proposal to train more content area teachers to help students with reading skills development. The workshop was to be conducted for interested Newark High School teachers. Several developments prompted this decision. First, teachers who had participated in the November workshop had not only recommended that subsequent workshops be conducted but also had expressed a preference for summer workshops. Secondly, the reading specialist at Newark High School was interested in working with more of his teacher colleagues and expressed the desire to personally conduct the workshop. Finally, a check with prospective content area teachers indicated a real interest in involvement. Dr. Loren Thompson, Director of Instruction for the Newark School District, subsequently approved the proposal with the condition that reading specialists from

the two other district high schools become involved. Invitations to participate were extended and accepted, and the two reading specialists joined six Newark High School teachers in a twenty-six hour workshop during the week of August 15, 1977. A total of $1,440 was granted for this training workshop. Teacher participants included three from social studies and one each from the areas of science, health, and English. Since 12 Newark High School teachers had participated in the November workshop, the total number of participants had increased to 18. This number represented about 23 percent of the classroom teachers at Newark High School. As in the case of the November workshop, the evaluative feedback from summer workshop participants was very positive.

Dissemination of project information beyond the Newark District has been accomplished in several ways. Practicum administrators representing the Conrad School District in Delaware and the Springfield School District in Pennsylvania have made teacher training manuals and slide-tapes available to interested teachers and reading supervisors in these districts. As a result of a referral by a staff member from Nova University, Charlotte Little (Supervisor of Home Economics, Howard County Public School, Columbia, Maryland) requested information about this project. She was developing a program involving the teaching of reading skills through home economics and found what we were doing to be quite adaptable to her own efforts.

Original plans called for the sending of fliers and teacher training manuals to reading specialists in school districts throughout the state of Delaware. A fortunate development made it possible to disseminate project information in a far more effective way. The fifth annual convention of the Diamond State Reading Association occurred

on November 3 and 4, 1977. As a result of their recent reading workshop experiences, the Newark District high school reading specialists were invited to make a presentation at the state convention. Reading specialists John McGill from Newark High School and Lorelei Meanor from Christiana High School accepted the invitation. On November 3, 1977, they made a two-hour presentation on the topic, "The High School Reader--Some Methods that Work." Through this presentation, secondary reading teachers from throughout the state of Delaware received a first-hand explanation of how content area teachers in the Newark District were succeeding in helping students to improve their reading skills. As a member of the Board of Directors of the Diamond State Reading Association, Rebecca Lowe has also communicated with many reading specialists in the state regarding project activities. Teacher training manuals have been, and will continue to be, given to any interested reading specialist; and slide-tapes have been made available on a loan basis.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

The problem of reading deficiencies among secondary level students is one of the most vexing problems in schools throughout the country. The problem is serious and complex, and it is unlikely to be solved quickly. Due to the many factors contributing to reading deficiencies, no single approach to remediation can be expected to work for all students. Special reading classes, the use of programmed reading materials, and individual student instruction by reading specialists are direct and frequently used methods of helping students. Unfortunately, these approaches are costly and require student and staff time commitments beyond content classes. For these reasons they are not viable solutions to reading deficiencies in many secondary schools. The approach used in this practicum was predicated on the idea that content teachers can, through the use of appropriate teaching procedures, effectively help students to improve their reading skills. There were no illusions that this procedure represented a singular or even the most effective way to deal with this complex problem. It was regarded as a method that merited careful analysis through a trial project.

Project results, as analyzed in the evaluation, indicate that all project objectives were achieved. Teacher evaluations show that training materials and workshop experiences contributed greatly to their understanding of reading problems and of how they could personally help students improve their reading skills. The fact that in excess of

50 percent of the project students measurably improved their reading skills during the time between pre- and post-testing is significant. Equally significant is the recognition, by most teachers, that teaching procedures related to the project were important factors contributing to improved student performance. On the basis of these results, one can reasonably conclude that, given the necessary training, content teachers can employ teaching procedures that do make a significant contribution to helping students improve their reading skills. Teacher training workshops of the type used in this project merit continued support to the extent that content teachers willingly wish to participate.

A number of recommendations may be helpful to anyone contemplating the involvement of content teachers in a program for improving student reading skills.

1. When recruiting teachers, remember that their willingness to participate hinges on several important factors. Teachers must receive assurance that they will not be teaching reading and will not function as reading teachers. They should understand that while they will be introduced to a variety of testing and instructional procedures, they will personally decide on which procedures to use. Emphasize that instructional procedures will not conflict with or detract from their efforts to teach subject content.
2. While the testing of student reading skill deficiencies is desirable, it does not have to be as extensive as in this project. Although teachers may realize that given students have reading problems, test results help them to gain a better understanding of the nature of such problems. Post-testing was necessary for measuring changes in this project but generally is not needed.

3. A teacher training workshop is extremely important, and the building reading specialist is perhaps the most effective leader of workshops. Summer workshops are probably best. Most content teachers have little, if any, knowledge of instructional procedures related to reading skill development. Appropriate written and verbal instructions are needed. It is also important to provide sufficient time for teachers to identify effective teaching techniques and strategies and develop materials to use such procedures. The five-day, twenty-six hour workshop conducted during the summer of 1977 was very satisfactory.
4 The use of a daily activity/strategy log is strongly recommended when teachers begin using desired procedures. A log of the type used in this project serves two important functions. It reminds teachers to use desired procedures frequently and makes them an integral part of their ongoing teaching effort. Also, a record of this kind can be very useful to someone who may be providing follow-up support to teachers. Building reading specialists are probably best suited to provide this support, since building administrators may represent a threat to some teachers.
5. English and social studies teachers are prime candidates for involvement in programs of this kind, since they rely heavily on written information and frequently give reading assignments. Although all teachers can benefit from workshop experiences, teachers who rarely give reading assignments will derive fewer benefits and are less likely to identify a need for involvement.

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GLOSSARY

Cloze Technique/Procedure - A technique used to determine the readability of materials and students' strengths and weaknesses in comprehending written materials. By filling in word blanks (clozure) from a written passage, a pupil demonstrates his understanding of the author's intent.

Content Class/Content Area Class - Any class of students studying a subject other than reading.

Content Teacher/Content Area Teacher - Any classroom teacher teaching a subject other than reading.

Fry Readability Formula/Test - A procedure for determining the reading grade level of a book by analyzing the words and sentence structures used in several passages within the book.

Informal Reading Inventory - A test developed by a teacher which measures a student's ability to effectively use specified written materials. The test measures student competence in eight areas, such as using parts of a book, arriving at word meanings through context, noting main ideas, and other items related to comprehension.

Informal Word Recognition Test - A test developed by a teacher which measures a student's ability to effectively recognize words used in specified written materials. Tests may be administered to individual students or groups of students.

GLOSSARY (Continued)

PQ4R - An acronym for a reading study process which involves previewing (P); questioning (Q); reading, reflecting, reciting, and reviewing (4R).

Practicum Administrators/Practicum Participants - The five administrators doing the practicum.

Project Teachers/Participating Teachers - The 15 classroom teachers, exclusive of the two reading specialists, who participated in this project.

Reading Grade Level - An expression used to describe a person's reading ability as it relates to standard grade level norms.

Reading Skills - Skills related to word recognition, reading comprehension, reading study procedures, contextual clues, and dictionary use.

Reading Skill Level - A measure of a person's ability to effectively recognize words in, and/or comprehend the meaning of, specified written material. The reading grade level of the material is incidental to this measuring process.

Secondary Level - Pertaining to grade levels beyond the elementary. Middle schools, junior high schools, and high schools are considered secondary levels.

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APPENDIX

TO: Director of Instruction
FROM: Richard C. Musselman

Workshop Dates: Nov. 4, 8, 9, 16, 22 and Dec. 1, 1976
Location: Newark High School

FINAL WORKSHOP REQUEST FORM

RE: SPECIFIC WORKSHOP PLANS (To be submitted at least four weeks prior to the beginning of the workshop.)

THEME OR TOPIC:

Teaching Reading in Content Area Classrooms -- Content area teachers will be instructed in procedures and techniques designed to improve the reading skills of students.

DETAILED AGENDA:

Agenda attached.

List the specific competencies the workshop participants are exptected to achieve.

1. Workshop teachers will be able to assess students' skills in vocabulary, reading comprehension, and reading study skill by constructing and/or using Word Recognition Tests, Informal Reading Inventories, PQ4R Study Process, and the Cloze Procedure.

2. Workshop teachers will be knowledgeable of levels of questioning. They will be able to use literal, interpretative, and critical questions when teaching.

3. Workshop teachers will be knowledgeable of specific teaching procedures designed to help students improve vocabulary and word recognition skills.

4. Workshop teachers will be knowledgeable of specific teaching procedures designed to help students improve reading comprehension skills.

5. Workshop teachers will be knowledgeable of the PQ4R study technique and will know how to instruct their students in this study procedure.

Approved: X

Disapproved: _____

NEWARK SCHOOL DISTRICT
Newark, Delaware

STAFF RELEASE FORM
(Indicates authorization of substitutes as needed)

DESCRIPTION OF PROJECT (Purpose, format, date, etc.):

Newark High School Workshop - November 4, 8, 9, 16, 22;
December 1, 1976

PARTICIPANTS*	SCHOOL
1.	Ogletown Middle
2.	Ogletown Middle
3.	Ogletown Middle
4.	Ogletown Middle
5.	Newark High
6.	Newark High
7.	Newark High
8.	Newark High
9.	Newark High
10.	Newark High
11.	Newark High
12.	Newark High
13.	Newark High
14.	Newark High
15.	Newark High
16.	Newark High
17.	Newark High

BUDGET SOURCE: 1500 11/24/76
Date

DIRECTOR OF INSTRUCTION

DIRECTOR OF SECONDARY EDUCATION

11/29/76
DATE

DISTRIBUTION:
Principals of Participants
Personnel Office
Director of Secondary Education
Director of Instruction

*Names Deleted

Table 2

Identification Numbers of Teachers in Reading Project

Teacher Number	School	Content Area
1	Newark High	Mathematics
2	Newark High	Mathematics
3	Ogletown Middle	Mathematics
4	Newark High	Mathematics
5	Newark High	Technology - Agriculture
6	Newark High	Technology - Television Arts & Media
7	Newark High	Social Studies
8	Newark High	Social Studies
9	Newark High	Social Studies
10	Ogletown Middle	Social Studies
11	Newark High	Social Studies
12	Ogletown Middle	Science
13	Newark High	Science
14	Newark High	Science
15	Newark High	Science
16	Ogletown Middle	Reading Specialist
17	Newark High	Reading Specialist

WORKSHOP AGENDA

READING IN THE CONTENT AREAS

8:30 a.m. - 3:00 p.m.

November 4, 1976

I. Welcome - Introductions

II. Reading Problems and Related Student Needs

III. Understanding Reading

A. Definition of Reading
B. Reading Comprehension

IV. Project Overview

V. Teaching Strategy - Levels of Questioning

November 8, 1976

I. Review Levels of Questioning

II. Reading Skills Assessment

A. Informal Word Recognition Tests
B. Informal Reading Inventory Tests

November 9, 1976

I. Review

A. Word Recognition Tests
B. Informal Reading Inventory Tests

II. Reading Skills Assessment - Cloze Technique

III. Fry Readability Formula

November 16, 1976

I. Review

A. Cloze Technique
B. Fry Readability Formula

II. Teaching Strategy - PQ4R

WORKSHOP AGENDA (Continued)

November 22, 1976

I. Review PQ4R

II. Teaching Strategies

A. Contextual Clues
B. Dictionary Skills

III. Identification and Development of Classroom Strategies and Activities

December 1, 1976

I. Identification and Development of Classroom Strategies and Activities

A. Strategies/Activities Common to All Content Areas
B. Strategies/Activities for Specific Content Areas

II. Workshop Evaluation

READING SKILLS DEVELOPMENT IN CONTENT AREA CLASSROOMS

PROJECT OVERVIEW

Project Goal -- To help students improve their reading skills in content area classrooms and thereby derive maximum benefit from written instructional materials used in content classrooms.

Teacher Workshop Objectives -- As a result of this workshop, participating teachers will be:

1. able to assess students' skills in vocabulary, reading comprehension and reading study skill by constructing and/or using work recognition tests, informal reading inventories, PQ4R study process, and the Cloze Technique;

2. knowledgeable of levels of questioning. They will be able to use literal, interpretative, and critical questions when teaching;

3. knowledgeable of specific teaching procedures designed to help students improve vocabulary and work recognition skills;

4. knowledgeable of specific teaching procedures designed to help students improve reading comprehension skills; and,

5. knowledgeable of the PQ4R study technique and will know how to instruct their students in this study procedure.

Project Design

Phase I - Teacher Training Workshop - Six days in November, 1976.

Phase II - Assessment of Students' Reading Skills (Pre-Testing) - December 6 to December 17, 1976.

Phase III - Use of Desired Teaching Activities/Strategies - December 20, 1976 to April 30, 1977.

Phase IV - Reassessment of Students' Reading Skills (Post-Testing) and Teachers' Judgment of Treatment Values - May 1 to May 13, 1977.

Phase V - Total Project Evaluation

DEVELOPING READING SKILLS IN CONTENT AREAS

AGREEMENT WITH WORKSHOP PARTICIPANTS

You have been invited to participate in a workshop designed to make you more knowledgeable of teaching techniques and procedures that can be used to help students improve their reading skills. Many techniques and procedures are compatible with teaching in content areas, and if used, will help students derive maximum benefit from written materials used in the instructional process.

Much time and effort has gone into the planning of this workshop. Dr. Loren Thompson (Director of Instruction) has expressed his confidence in this project by committing the financial support necessary to employ substitute teachers. Naturally, a project of this magnitude requires careful evaluation. We do plan to measure the effects of your "treatment of students" through appropriately designed pre/post-testing instruments. Indeed, the results of these tests will be of primary importance in judging if workshops of this kind will be offered to other content teachers in the Newark District. Remember, an accurate assessment of what we are doing is directly related to your sustained effort throughout this pilot project.

Understandably, we are very much concerned that the things you learn will be utilized on an ongoing basis in your classroom. This workshop can only be considered a success if you effectively help your students to improve their reading skills. In order to promote the sustained use of the teaching techniques and procedures learned in this workshop, we are requesting that each participant enter into an agreement with us. Agreement will be flexible enough to satisfy individual teaching styles and needs, yet will promote the use of desired teaching strategies on an ongoing basis.

READING SKILLS DEVELOPMENT IN CONTENT AREAS

Record of Classroom Activities/Strategies

Teacher	Project Class
Activities/Strategies	Dates Activity/Strategy Used
Level of Questioning:	
1. Write out appropriate questions, using all levels, to be asked when teaching a lesson.	
2. Have a student record all questions asked by the teacher while teaching a lesson. Analyze the strengths and weaknesses of the questioning.	
3. Make a tape recording of a lesson. Listen to the tapes and analyze the strengths and weaknesses of the questioning.	
Word Attack Skills--Vocabulary, Dictionary, Word Recognition:	
1. As new words are encountered in the daily content study, enter them on the class' new word list and pronounce, define, discuss, and practice their use with the class within the content context.	
2. Review the new word list at regular intervals with the class. Conduct a written quiz after each review.	
3. Have students use a book glossary or dictionary in class to look up the meaning of all new words as they are encountered in daily lessons. List all new words on the chalkboard, and discuss their meaning and application in the course context.	

Record of Classroom Activities/Strategies
Page 2

Activities/Strategies	Dates Activity/Strategy Used
4. Reteach or review dictionary skills to those students needing additional help utilizing different types of material each time: books, newspapers, encyclopedias, magazines, etc. Select materials appropriate to the unit of study.	
Comprehension Skills:	
1. Prepare a written study sheet for student use with a given reading assignment. Give a short quiz after the assigned reading is done.	
2. Prepare a set of written questions designed to help students interpret the major ideas presented in a reading assignment. Give a short quiz on the assigned reading.	
3. Conduct a class review of a specific reading assignment. Develop a written review guide sheet for use by the students including information such as topic or question outlines, context clues, new word attack items, etc.	
4. Build reading time into the classroom activities with the teacher assisting individual students with reading needs.	
5. Work with your class in an oral situation to determine any decoding problems. Keep a tally of contextual problems encountered.	

Record of Classroom Activities/Strategies
Page 3

Activities/Strategies	Dates Activity/Strategy Used
6. Designate an observer who will tally incidents of contextual clues problems arising, noting the types of clues with which the students need help. Help may then be given by the teacher, another student, or the use of a dictionary.	
7. Prepare a worksheet using captions (or narrations) from a filmstrip. Delete words from the captions and have students supply them as the filmstrip is shown.	
8. While showing a filmstrip, ask students questions about the pictorial part of the frame that will help them to learn to use clues to the meaning of the written part of the frame.	
Study Skills:	
1. Devote the study time needed to thoroughly teach the PQ4R process to all project classes shortly after the conclusion of the workshops.	
2. Review and reinforce the PQ4R process with all project classes on a periodic basis.	
3. Review student PQ4R notebooks once a week to ascertain that the technique is being used properly.	
4. Plan and conduct class lessons using the PQ4R strategy.	

ADDITIONAL ACTIVITIES/STRATEGIES
FOR READING SKILL DEVELOPMENT

Level of Questioning

1. Play baseball: construct questions based on a reading assignment. Questions are weighted as single, double, triple, or home run, depending on their level of difficulty. The class is divided into two teams with runs earned for correct answers. If questions are missed, the other team members must answer them correctly for an "out" to occur.

2. "Jeopardy" is a game that can be used to conduct a unit review. Five learning categories are placed on the chalkboard as follows:

Famous Firsts	Dates	Settling the West	Industrial Revolution	Pot Luck
10	10	10	10	10
20	20	20	20	20
30	30	30	30	30

Divide the class into two teams of similar ability. Choose a person from team one and have him select a category and point value under that category, such as "Dates for 30." Read an appropriate weighted date or concept from that category (for example -- depression). The person from team one must then form a question that contains the date in it. A correct response might be: What happened in 1929? Score the chosen points for the team for each correct response. If response is incorrect, a member of the other team can answer. Alternate between teams for choosing categories and giving responses.

ADDITIONAL ACTIVITIES/STRATEGIES (Continued)

3. On a weekly or unit basis, place on the chalkboard two inferential or critical level questions pertaining to the subject being studied. Students may write answers and place them in an answer box any time during the week or unit. Responses to questions are used in a review process, and good responses receive appropriate extra credit.

Word Attack Skills

1. As key words are encountered and used during the teaching of the unit's work, a set of flash cards is assembled. Assembled flash cards can be used as a part of the review for unit tests.
2. Construct a list of key words for a unit of work. Next to the word, identify the page in the text where the word is used. Distribute to students at the beginning of the unit as a study and review guide for the unit.
3. Construct a study or summary exercise of the type illustrated below:

American Government

Key Letters	Legislative Branch	Executive Branch	Judicial Branch	Constitutional Amendment	Political People
C		Cabinet			
D			Defendant		
F					Gerald Ford
BR				Bill of Rights	

Students are then divided into groups, and each group of students has five minutes to identify key words related for letters in each block. The four words are examples of acceptable responses.

ADDITIONAL ACTIVITIES/STRATEGIES (Continued)

4. Have students compile a list of key words as they are encountered in a unit. Word lists should be made in their notebooks. Periodic checks by the teacher for proper spelling and meanings result in a self-constructed study source for students.
5. Make up a set of cards, writing prefixes on one side. Words should be related to the subject being studied. Students work in pairs or groups. Holding the card so prefix is visible, students write as many words as they can which use the prefix. Proper spelling and definitions can also be required. If they identify more words than listed, the list can be extended after checking the proper spelling and meaning in a dictionary.
6. Construct a word-definition card set for a unit of work. A key word is printed on one side and the definition and illustrated use of the word on the other. Card sets may be used by teachers for class study and review. If multiple sets are constructed, they can be used by students in small group activities.

Reading Comprehension Skills

1. The following procedure can motivate students toward better comprehension of outside reading. Each student submits two questions based on assigned reading. Written questions are placed in a box. Each student draws a question from the box, and correct answers are appropriately rewarded. Some of the better questions should be included in unit quizzes or tests.
2. "Sixty Minutes" -- Identify groups of four or five students. Have groups collect articles from newspapers and magazines for a

ADDITIONAL ACTIVITIES/STRATEGIES (Continued)

designated period of time and on a specified topic. After articles are assembled, the group writes a "60 Minutes" type of news report. Reports can be taped and played back to the class.

3. Students are given a reading assignment and asked to write a summary of what they read. The teacher or a classmate should then read the summary and verbally state the main ideas in the assigned reading.
4. Students are assigned to cut out and summarize a magazine or newspaper article dealing with a subject being studied in the classroom.
5. Identify a series of key questions about a new reading assignment. Write the questions on cards. As students enter the classroom each picks up a card and proceeds immediately to answer the question, with or without the use of material assigned for reading. Questions may then be discussed by the class, or students may paperclip their answers to the question card and turn them in for teacher evaluation.
6. Plan and teach a lesson around key terms that are included in a reading assignment. Stress the importance of identifying and understanding key words in reading assignments.

Study Skills

1. Help students to develop skill in outlining a reading assignment by teaching and illustrating how it should be done. A sample outline on an overhead transparency or paper handout should

ADDITIONAL ACTIVITIES/STRATEGIES (Continued)

accompany any presentation.

2. Assign students the responsibility of constructing an outline for a given reading assignment.
3. Encourage students to develop their summarizing and outlining skills by permitting them to use their own notes when taking quizzes and/or tests.

ASSESSMENT OF YOUR READING STUDY HABITS

Please respond to each of the following statements by writing yes or no in the space provided. This inventory will be of value to you only if you are perfectly frank with your responses.

_____ 1. I routinely skim over and make a preliminary survey of assigned reading by looking at paragraph headings before reading the assignment in detail.

_____ 2. When doing assigned reading, I routinely convert boldface headings into questions in order to increase my reading comprehension.

_____ 3. When doing assigned reading, I routinely answer the questions constructed from boldface headings.

_____ 4. When reading assigned work, I routinely make written comments which summarize content ideas in my own words.

_____ 5. I routinely pause at logical breaks in my reading to reflect and recite the principal points being presented in the reading.

_____ 6. After completing a reading assignment, I routinely review the major ideas included in the assigned work.

SUMMARY
TEACHER EVALUATIVE COMMENTS
ON DAILY WORKSHOP EXPERIENCES

Project Overview

Two teachers expressed some difficulty in developing a clear perception of the total project, but most participants reacted favorably to the presentation on the project overview.

Levels of Questioning

Responses were very positive about this study area. Most teachers recognized the different levels of questioning but seldom consciously planned for careful questioning procedures in the classroom. Few teachers related effective structuring of questions to improving the reading comprehension skills of students.

Word Recognition Tests

The structuring, use, and scoring of word recognition tests caused more discussion and disagreement than any other workshop area. Although teachers generally acknowledged the usefulness of individual word recognition tests, several teachers challenged the validity of group word recognition tests. Most teachers thought that too much time was devoted to this area of work.

Reading Comprehension Tests

Both the informal reading inventory and the Cloze test procedure were well received by the participants. Comments regarding the structure and use of these tests were uniformly positive. Favorable comments were also made about the Fry Readability Formula. Several

TEACHER COMMENTS (Continued)

participants did express the feeling that too much time was being devoted to testing procedures.

Reading Study Skills

More positive comments were made about the PQ4R study process than any other workshop area. Contributions made by the two reading teacher participants were singled out as being particularly helpful to classroom teacher participants. Teacher comments reflected confidence that the PQ4R study process held great promise for improving the reading comprehension skills of students.

Classroom Teaching Strategies and Techniques

Approximately two of the six workshop days were devoted to this content area. After working on testing procedures, teachers were anxious to get started on identifying appropriate teaching procedures. Their comments suggested this interest. Participating reading teachers were again identified as being particularly helpful in this workshop area. Approximately half of the participants expressed the thought that more workshop time should have been devoted to identifying and developing appropriate classroom procedures.

EVALUATION OF READING
IN THE CONTENT AREAS WORKSHOP

Dear Participant:

Now that the workshop is almost over, we would greatly appreciate your assistance in evaluating its various components. Only through your accurate feedback can we hope to improve this instructional mode.

After reading the questions that follow, please answer them on the answer sheet.

1. The scale of values that is referred to in the questions is printed on the top of the answer sheet.

2. The letters to the left of the scale refer to the questions.

3. The number indicating your choice should be recorded on the record form when indicated in the question. "NR" (no response) should be indicated when you cannot remember enough facts on which to base an opinion.

EVALUATION QUESTIONS

Answer all questions (A through L) by placing responses in corresponding letter columns on answer sheet.

A. On the Record Form in Column A, please rank the various areas according to how helpful you feel they will be to you in improving reading skills in your classroom. Place a "1" next to the most helpful, a "2" next to the second most helpful, etc.

B. How do you feel about the amount of time that was spent on various workshop topics?

C. To what extent did the printed materials teach what they intended to teach?

D. To what extent were the printed materials attractive?

E. To what extent were the printed materials self-teaching?

F. To what extent were the printed materials clear in their presentation?

G. To what extent should each of the areas be revised?

H. To what extent did the audio-visual materials teach what they intended to teach?

I. To what extent were the A-V materials attractive?

J. To what extent were the A-V materials self-teaching?

K. To what extent were the A-V materials clear in their presentation?

L. To what extent did the A-V materials help you?

M. To what extent was the explanation of the objectives thorough? Using the Scale of Values, record your answer next to Question M on the answer sheet.

N. To what extent were you aware of the objectives of the workshop? Using the Scale of Values, record your answer next to Question N on the answer sheet.

EVALUATION QUESTIONS (Continued)

O. How do you feel about the length of time of the total workshop? Consult the Scale and record your answer next to Question O.

P. How do you feel about the physical facilities? Consult the Scale and record your answer next to Question P.

Q. How do you feel about the variety of activities? Consult the Scale and record your answer next to Question Q.

R. How do you feel about the variety of activities? Consult the Scale and record your answer next to Question R.

S. Assuming that you were conducting a workshop such as the one you have just completed, what topics would you include each day? The topics are listed next to Question S with symbols next to them. Please write the symbols in the appropriate column in the order you would present them. You may repeat symbols, omit symbols, or reduce the number of days.

T. COMMENTS: Please use Answer Sheet.

ANSWER SHEET
EVALUATION OF READING IN THE CONTENT AREAS WORKSHOP

SCALE OF VALUES

Date _____

Question	5	4	3	2	1
B	Too Long				Too Short
C	Thoroughly Taught				Taught Very Little
D	Very Attractive				Very Unattractive
E	Completely Self-Teaching				Needs Extensive Explanation
F	Very Clear				Very Unclear
G	No Revision Necessary				Complete Revision Necessary
H	Thoroughly Taught				Taught Very Little
I	Very Attractive				Very Unattractive
J	Completely Self-Teaching				Needs Extensive Explanation
K	Very Clear				Very Unclear
L	Very Helpful				No Help at All
M	Thorough				Incomplete
N	Clear				Vague
O	Too Long				Too Short
P	Suitable				Unsuitable
Q	Sufficient				Insufficient
R	To a Great Extent				Not at All

RECORD FORM

Workshop Areas — Questions

Workshop Areas	A	B	C	D	E	F	G	H	I	J	K	L
Informal Reading Inventory												
PQ4R Technique												
Levels of Questioning												
Word Recognition												
Related Activities												
Fry Readability Formula												
Cloze Technique												
Contextual Clues												

M_____ P_____

N_____ Q_____

O_____ R_____

ANSWER SHEET (Continued)

S

AA - Informal Reading Inventory
BB - PQ4R Technique
CC - Levels of Questioning
DD - Word Recognition
EE - Related Activities
FF - Fry Readability Formula
GG - Cloze Technique
HH - Contextual Clues

First Day	Second Day	Third Day	Fourth Day	Fifth Day	Sixth Day

T

COMMENTS:

Strengths of Workshop:

Weaknesses of Workshop:

Suggestions for the Future:

Other Comments:

Optional (But very useful):

Please circle:

I teach in a - high school middle school.

The subject I teach is - mathematics social studies
technology science.

TEACHER EVALUATIVE COMMENTS ON READING
IN CONTENT AREAS WORKSHOP

Strengths of Workshop

1. A wealth of useful information was presented.
2. Workshop experiences made me more aware of techniques to be used by content teachers.
3. We were not limited to a single way of doing things; a variety of methods and techniques was studied.
4. We produced a variety of useful instructional materials.
5. Levels of questioning and PQ4R materials were particularly helpful.
6. The workshop offered the time and opportunity to work with others on this important instructional area.
7. I appreciated the informal working relationship among students and teachers in the workshop.
8. Information provided was very complete and, for the most part, very useful.

Weaknesses of the Workshop

1. Too much time was spent on word recognition.
2. The design of pre- and post-testing procedures should be more uniform among project teachers.
3. Workshop experiences were less applicable to the math field than other content areas.
4. Review of materials studied resulted in too much repetition.
5. Printed materials were not always well organized.
6. Too much time was devoted to assessing student weaknesses.
7. Not enough time was devoted to review of new materials available.
8. More time should have been devoted to generating new instructional techniques and activities.

EVALUATIVE COMMENTS (Continued)

Suggestions for the Future and Other Comments

1. Use a quasi experimental design for evaluating the success of teaching efforts.

2. The ideal time to conduct this kind of workshop is during the summer.

3. More specialized materials for math teachers are needed.

4. Consider shortening the workshop to five days.

5. There were many useful activities, and I appreciated the opportunity to participate.

6. More time should be devoted to identifying and developing teaching activities and related materials.

7. Spend less time on evaluating reading problems (since we already know they exist), and spend more time on correction methods.

Table 19

Pre/Post-Test Score Changes and Averages
for Teacher 1 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Geometry One (Section 1)	Individual Word Recognition	22	2	4	16	82	91	+9
	Cloze	21	11	0	10	53	54	+1
	Reading Study Skills Self-Assessment	26	0	5	21	-	-	-
Geometry One (Section 2)	Individual Word Recognition	24	3	3	18	75	91	+16
	Cloze	22	12	3	7	58	55	-3
	Reading Study Skills Self-Assessment	24	0	4	20	-	-	-

Table 19A

Student Performance Level Changes for Teacher 1 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Geometry One (Section 1)	Word Recognition	22	0	22	0	22
	Reading Comprehension	21	4	17	3	18
Geometry One (Section 2)	Word Recognition	24	7	17	2	22
	Reading Comprehension	22	3	19	2	20

Table 20

Pre/Post-Test Score Changes and Averages
for Teacher 2 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Elementary Algebra	Reading Study Skills Content Tests	25	10	2	13	77	79	+2

Table 21

Pre/Post-Test Score Changes and Averages
for Teacher 3 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Mathematics	Individual Word Recognition	25	8	4	13	64	69	+5
	Informal Reading Inventory	25	4	16	5	41	48	+7
	Reading Study Skills Content Tests	28	3	15	10	63	65	+2

Table 21A

Student Performance Level Changes for Teacher 3 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Mathematics	Word Recognition	25	17	8	14	11
	Reading Comprehension	25	19	6	16	9

Table 22

Pre/Post-Test Score Changes and Averages
for Teacher 4 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Algebra One	Group Word Recognition	16	3	5	8	91	94	+3
	Cloze Test	17	5	1	11	64	66	+2
Business Math	Group Word Recognition	12	3	5	4	83	85	+2
	Informal Reading Inventory	13	-	-	-	*	64	-

*This test involved a series of questions which required students to read and interpret two lengthy word problems. Students reacted negatively to this assessment process. Some would not attempt to answer the questions; and of those that did try, none scored above 10 percent. The post Informal Reading Inventory Test was structured in a more conventional way.

Table 22A

Student Performance Level Changes for Teacher 4 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Algegra One	Word Recognition	16	1	15	1	15
	Reading Comprehension	17	3	14	1	16
Business Math	Word Recognition	12	1	11	1	11
	Reading Comprehension	13	-	-	7	5

Table 23

Pre/Post-Test Score Changes and Averages
for Teacher 5 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Fundamentals of Algebra	Group Word Recognition	11	1	1	9	70	91	+21
	Cloze Test	11	2	0	9	53	59	+6
	Reading Study Skills Self-Assessment	12	0	1	11	-	-	-
Horticulture	Group Word Recognition	14	2	2	10	63	82	+19
	Informal Reading Inventory	15	4	0	11	70	76	+6
	Reading Study Skills Self-Assessment	16	0	2	14	-	-	-

Table 23A

Student Performance Level Changes for Teacher 5 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Fundamentals of Algebra	Word Recognition	11	7	5	3	8
	Reading Comprehension	11	4	7	3	8
Horticulture	Word Recognition	14	5	9	2	12
	Reading Comprehension	15	2	13	2	13

Table 24

Pre/Post-Test Score Changes and Averages
for Teacher 6 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Television Production	Individual Word Recognition	11	8	3	0	97	92	-5
	Informal Reading Inventory	11	8	2	1	84	73	-11
	Reading Study Skills Self-Assessment	13	0	6	7	-	-	-
Fundamentals of Television (Section 1)	Individual Word Recognition	20	7	6	7	94	94	0
	Informal Reading Inventory	20	6	0	14	74	75	+1
	Reading Study Skills Self-Assessment	22	1	7	14	-	-	-
Fundamentals of Television (Section 2)	Individual Word Recognition	17	3	7	7	91	92	+1
	Informal Reading Inventory	18	5	1	12	73	76	+3
	Reading Study Skills Self-Assessment	18	0	6	12	-	-	-

Table 24A

Student Performance Level Changes for Teacher 6 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Television Production	Word Recognition	11	0	11	0	11
	Reading Comprehension	11	0	11	2	9
Fundamentals of Television (Section 1)	Word Recognition	20	0	20	0	20
	Reading Comprehension	20	2	18	2	18
Fundamentals of Television (Section 2)	Word Recognition	17	1	16	0	17
	Reading Comprehension	18	5	13	2	16

Table 25

Pre/Post-Test Score Changes and Averages
for Teacher 7 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Social Studies I (Section 1)	Group Word Recognition	23	8	3	12	43	59	+15
	Cloze Test	24	3	1	20	26	37	+11
	Reading Study Skills Self-Assessment	*25	1	12	12	-	-	-
Social Studies I (Section 2)	Group Word Recognition	23	1	2	20	51	68	+17
	Cloze Test	23	5	0	18	31	40	+10
	Reading Study Skills Self-Assessment	*24	0	9	15	-	-	-

*Many of these students had severe reading problems and needed help to read and interpret the self-assessment instrument.

Table 25A

Student Performance Level Changes for Teacher 7 Classes

Class	Skill Area Tested	Number Tested	Number of Students Pre-Test Results at Frustration Level	Pre-Test Results at Instructional/ Independent Level	Post-Test Results at Frustration Level	Post-Test Results at Instructional/ Independent Level
Social Studies I (Section 1)	Word Recognition	23	17	6	13	10
	Reading Comprehension	24	20	4	16	8
Social Studies I (Section 2)	Word Recognition	23	16	7	14	9
	Reading Comprehension	23	17	6	12	11

Table 26

Pre/Post-Test Score Changes and Averages
for Teacher 8 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Social Studies II	Individual Word Recognition	22	0	0	22	77	90	+13
	Cloze Test	23	7	2	14	43	51	+8
	Reading Study Skills Self-Assessment	*23	0	9	14	-	-	-
Social Studies III	Individual Word Recognition	18	0	0	18	61	86	+25
	Informal Reading Inventory	17	4	1	12	52	58	+6
	Reading Study Skills Self-Assessment	*18	0	8	10	-	-	-

*Many of these students had severe reading problems and needed help to read and interpret the self-assessment instrument.

Table 26A

Student Performance Level Changes for Teacher 8 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Social Studies II	Word Recognition	22	8	14	6	16
	Reading Comprehension	23	7	16	5	18
Social Studies III	Word Recognition	18	11	7	6	12
	Reading Comprehension	17	13	4	10	7

Table 27

Pre/Post-Test Score Changes and Averages
for Teacher 9 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
U.S. History (Section 1)	Group Word Recognition	23	0	16	7	94	100	+6
	Informal Reading Inventory	23	2	2	19	81	90	+9
	Reading Study Skills Self-Assessment	23	0	5	18	-	-	-
	Reading Study Skills Content Tests	23	3	4	16	81	86	+5
U.S. History (Section 2)	Group Word Recognition	21	0	16	5	95	100	+5
	Informal Reading Inventory	20	1	4	15	79	89	+10
	Reading Study Skills Self-Assessment	21	0	4	17	-	-	-
	Reading Study Skills Content Tests	21	1	6	14	76	83	+7
U.S. History (Section 3)	Group Word Recognition	24	0	24	0	100	100	0
	Informal Reading Inventory	23	4	1	18	86	92	+6
	Reading Study Skills Self-Assessment	24	1	4	19	-	-	-
	Reading Study Skills Content Tests	24	2	3	19	81	86	+5

Table 27A

Student Performance Level Changes for Teacher 9 Classes

Class	Skill Area Tested	Number Tested	Number of Students Pre-Test Results at Frustration Level	Pre-Test Results at Instructional/ Independent Level	Post-Test Results at Frustration Level	Post-Test Results at Instructional/ Independent Level
U.S. History (Section 1)	Word Recognition	23	0	23	0	23
	Reading Comprehension	23	2	21	2	21
U.S. History (Section 2)	Word Recognition	21	0	21	0	21
	Reading Comprehension	20	2	18	1	19
U.S. History (Section 3)	Word Recognition	24	0	24	0	24
	Reading Comprehension	23	1	23	1	23

Table 28

Pre/Post-Test Score Changes and Averages
for Teacher 10 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Social Studies (Section 1)	Group Word Recognition	26	7	10	9	75	81	+6
	Cloze	27	1	8	18	31	48	+17
	Reading Study Skills Content Test	28	5	2	21	72	81	+9
Social Studies (Section 2)	Group Word Recognition	22	3	10	9	78	87	+9
	Cloze	22	3	10	9	46	49	+3
	Reading Study Skills Content Tests	24	3	7	14	75	83	+8

Table 28A

Student Performance Level Changes for Teacher 10 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Social Studies (Section 1)	Word Recognition	26	14	12	9	17
	Reading Comprehension	27	17	10	9	18
Social Studies (Section 2)	Word Recognition	22	8	14	5	17
	Reading Comprehension	22	3	19	2	20

Table 29

Pre/Post-Test Score Changes and Averages
for Teacher 11 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
U.S. History (Section 1)	Group Word Recognition	19	-	-	-	*	-	-
	Informal Reading Inventory	19	0	3	16	65	78	+13
	Reading Study Skills Content Test	19	4	2	13	75	80	+5
U.S. History (Section 2)	Group Word Recognition	13	-	-	-	*	-	-
	Informal Reading Inventory	13	1	1	11	57	74	+17
	Reading Study Skills Content Test	14	2	0	12	80	85	+5
U.S. History (Section 3)	Group Word Recognition	18	-	-	-	*	-	-
	Informal Reading Inventory	18	0	4	14	52	66	+14
	Reading Study Skills (Content Test	19	5	2	12	70	80	+10

*All students scored 90 to 100 percent on the pre-test, so no Group Word Recognition post-tests were given.

Table 29A

Student Performance Level Changes for Teacher 11 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
U.S. History (Section 1)	Word Recognition	19	0	19	-	-
	Reading Comprehension	19	7	12	4	15
U.S. History (Section 2)	Word Recognition	13	0	13	-	-
	Reading Comprehension	13	5	8	3	10
U.S. History (Section 3)	Word Recognition	18	0	18	-	-
	Reading Comprehension	18	10	8	8	10

Table 30

Pre/Post-Test Score Changes and Averages
for Teacher 12 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Science (4 Sections)	Group Word Recognition	82	12	20	50	73	84	+11
	Cloze	97	28	7	62	44	51	+7
	Reading Study Skills Content Test	108	12	31	65	71	76	+6

Table 30A

Student Performance Level Changes for Teacher 12 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Science (4 Sections)	Word Recognition	82	28	54	21	61
	Reading Comprehension	97	42	55	31	66

Table 31

Pre/Post-Test Score Changes and Averages
for Teacher 13 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Biology 10	Individual Word Recognition	23	7	3	13	86	91	+5
	Cloze	20	4	1	15	49	59	+10
	Reading Study Skills Self-Assessment	21	1	8	12	-	-	-

Table 31A

Student Performance Level Changes for Teacher 13 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Biology 10	Word Recognition	23	1	22	0	23
	Reading Comprehension	20	3	17	2	18

Table 32

Pre/Post-Test Score Changes and Averages
for Teacher 14 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Biology 10 (Section 1)	Individual Word Recognition	19	3	1	15	73	87	+14
	Cloze	20	3	1	16	42	49	+7
	Reading Study Skills Self-Assessment	23	1	9	13	-	-	-
Biology 10 (Section 2)	Individual Word Recognition	29	10	5	14	83	85	+2
	Cloze	25	13	3	9	45	44	-1
	Reading Study Skills Self-Assessment	29	2	11	16	-	-	-

Table 32A

Student Performance Level Changes for Teacher 14 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Biology 10 (Section 1)	Word Recognition	19	7	12	5	14
	Reading Comprehension	20	8	14	6	16
Biology 10 (Section 2)	Word Recognition	29	4	25	5	24
	Reading Comprehension	25	9	16	10	15

Table 33

Pre/Post-Test Score Changes and Averages
for Teacher 15 Classes

Class	Test	Number Tested	Number of Students With Post-Test Scores			Average Percentage Score		
			Decreased	Unchanged	Increased	Pre-Test	Post-Test	Change
Biology 10 (Section 1)	Group Word Recognition	20	-	-	-	*	-	-
	Cloze	19	6	4	9	42	44	+2
	Reading Study Skills Self-Assessment	20	1	7	12	-	-	-
Biology 10 (Section 2)	Group Word Recognition	24	-	-	-	*	-	-
	Cloze	24	6	3	15	46	49	+3
	Reading Study Skills Self-Assessment	24	0	6	18	-	-	-

*Only one student in both classes scored below 90 percent, so no post Group Word Recognition Test was given.

Table 33A

Student Performance Level Changes for Teacher 15 Classes

Class	Skill Area Tested	Number Tested	Number of Students			
			Pre-Test Results		Post-Test Results	
			at Frustration Level	at Instructional/ Independent Level	at Frustration Level	at Instructional/ Independent Level
Biology 10 (Section 1)	Word Recognition	20	0	20	-	-
	Reading Comprehension	19	8	11	6	13
Biology 10 (Section 2)	Word Recognition	24	1	23	-	-
	Reading Conprehension	24	7	17	5	19

SUMMARY OF TEACHER COMMENTS
FROM PROJECT EVALUATION SHEET

6. A. I would like to work on translation of word problems to symbols.

   B. I would like to have more time spent on strategies and less on diagnosis.

   C. Please stress the prescription rather than diagnosis of reading problems.

   D. Note-taking techniques should also be a study area.

7. A. Yes, but I think math teachers have the most difficulty in doing this.

   B. Yes, particularly in the areas of PQ4R, questioning skills, making study guides, and promoting oral reading.

   C. Yes, even math!

   D. I think all teachers could incorporate some of the ideas into their subject area teaching so that all content area teachers should be involved.

   E. Yes, there should be total school involvement. Even highly motivated and talented students could benefit from exposure to the teaching strategies we learned.

   F. Yes, there is need for a general awareness in all subject areas.

   G. Yes, but I believe the math area should not be involved.

   H. Definitely!

   I. I think everyone should have the opportunity to become involved.

8. A. I am more conscious of student reading problems, direct more attention to questioning in class, and emphasize the importance of reading to students.

   B. Because of the type of students I receive, I already use many of the ideas presented. It's good to know I'm moving in the right direction.

   C. I now begin each new chapter with an outline done by myself or the students. Each day as we meet new words, definitions,

SUMMARY OF TEACHER COMMENTS (Continued)

theorems, etc., we add to the outline. I do check students' outlines periodically as I would homework.

D. I am particularly inclined to place greater emphasis on word attack skills and study habits.

E. I am now far more critical about the written materials I use in my classes.

F. I am more aware of questioning techniques which should enhance comprehension. Chapter previewing became a regular occurrence, as did short reading assignments, both of which had only been done on occasion.

G. I never was aware of the PQ4R process, and I am now more tolerant of students with reading problems.

H. I spend more time evaluating the types of questions I ask. I evaluate more closely the reading assignments I give. I am also far more conscious of the existence of reading problems among my students.

I. There is a need for more interchange of ideas during the course of the school year.

J. The workshop should take place prior to, or immediately following, the opening of school, so that procedures can be used the full year.

K. I think it is important that reading skill development be implemented at the beginning of the school year and thereby make it a normal part of the instructional process.

READING IN CONTENT AREA
PROJECT EVALUATION

1. As a result of your project experiences, please check the response below that best describes the extent to which you will continue to assist students with reading skills development.

   _____ I will provide little or no assistance; it's really not my job.

   _____I will provide some assistance, but not on a regular basis.

   _____I will provide some assistance on a regular basis.

   _____I will provide extensive assistance on a regular basis.

2. Please check any (or all) of the following skills development areas which you will continue to emphasize in your teaching strategies and procedures.

   _____ Questioning Skills

   _____ Word Attack Skills

   _____ Comprehension Skills

   _____ Study Skills

3. To what extent did the subject area of project students change during the application phase of this project? Please check the most appropriate response.

   _____ The performance level of most students decreased.

   _____ The performance level of most students remained unchanged.

   _____ The performance level of most students improved.

4. If the performance level of most project students improved during the application phase of this project, to what extent do you relate the improved performance to project strategies and activities? Please check the most appropriate response.

   _____ Improvement had little, if any, relationship to project activities and strategies.

   _____ Improvement was partially due to project activities and strategies, but other factors were also significant.

PROJECT EVALUATION (Continued)

_____ Project activities and strategies were the most significant factors influencing improved student performance.

5. Immediately following the workshop you had some definite feelings about the potential value of the workshop. How do you now feel about the workshop experiences in light of your actual involvement in the project over the past five months? Please check the most appropriate response.

_____ The workshop was of no value, and it has not influenced my teaching procedures.

_____ The workshop was of little value, but it did influence my teaching procedures slightly.

_____ The workshop was a good experience and has had a definite influence on my teaching procedures.

_____ The workshop was a very rewarding experience that has greatly influenced my teaching procedures.

6. If you were to be involved in a future workshop related to reading in content areas, what additional needs would you like to see addressed? Please comment.

7. Considering all of your project experiences, do you now feel that other content teachers should become involved with helping students to develop better reading skills? Please comment.

8. Please make any comments that may not have been mentioned that will help us to know your feelings about the workshop, related classroom experiences, or the whole field of helping students with reading skill development.

READING SKILL DEVELOPMENT IN CONTENT CLASSROOMS

I. CLAIM: Given appropriate training, content teachers can make an important contribution to helping students improve their reading skills.

II. BASIS FOR CLAIM: During the 1976-77 school year, 15 teachers from Newark High School and Ogletown Middle School participated in a training workshop to help them help students with reading deficiencies. Following the workshop, teachers applied what they had learned. Results of this experience support the claim.

III. WHAT CONTENT TEACHERS MUST KNOW: Teachers must know how to test student skill levels in word recognition and reading comprehension. They must have a thorough knowledge of classroom questioning procedures and effective study techniques for students. Finally, they must be knowledgeable of other teaching procedures designed to help students improve word recognition and reading comprehension skills.

IV. FOR ADDITIONAL INFORMATION: Anyone desiring additional information about the project design, workshop activities, and teacher training materials, may contact--

- Jerome M. Levy, Principal, Ogletown Middle School
- Rebecca Lowe, District Reading Supervisor, Conrad Area School District, Delaware
- William T. McLain, Administrative Assistant, Newark High School
- Richard C. Musselman, Associate Principal, Newark High School
- Nancy A. Nelson, District Director of Media Services, Springfield School District, Pennsylvania

NEWARK SCHOOL DISTRICT
OFFICE OF SECONDARY EDUCATION
Newark, Delaware

January 31, 1978

Assessment of the Project: Helping Students Improve Reading Skills in Selected Content Areas

Prior to my appointment as Director of Secondary Education in July 1974, I was principal at Newark High School. The need for increased reading instruction was evident at that time, and in September 1973 the first reading specialist was employed to provide staff leadership in that area. During the past few years, I have witnessed the emergence of a reading program in which English teachers play a direct role in helping students to improve their reading skills. Through departmental efforts and special inservice experiences, English teachers reviewed and selected appropriate instructional materials and patterned their instructional activities and procedures in accord with student reading abilities.

The work done in this project is a natural and significant extension of this effort to fields other than English. Expansion of the program to one of our district middle schools (Ogletown Middle School), and the involvement of the reading specialists from our other two district high schools is particularly gratifying, since programs of this type hold much promise for the other secondary schools in the Newark District.

I am confident that all classroom teachers have the potential to help students develop reading skills, and the experiences provided teachers in this project have and will continue to enhance their teaching effectiveness in the years ahead. As Director of Secondary Education I have and will continue to support the expansion of this program in other district schools. The results of this project are impressive and I commend the five administrators directing the project for their leadership in challenging the problem of student reading deficiencies in the Newark School District.

H. Nelson Freidly, Jr.

H. Nelson Freidly, Jr.
Director of Secondary
Education

Conrad Area School District
99 Middleboro Road
Wilmington, Delaware 19804
Telephone 998-0107

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VIRGINIA D. VANSCIVER

January 17, 1978

Dr. Sam Kaylin
Nova University
3301 College Avenue
Fort Lauderdale, Florida 33314

Dear Dr. Kaylin:

Mrs. Rebecca Lowe has requested that I verify her participation and results in a practicum, "Helping Students Improve Reading/Study Skills in Selected Content Areas".

Mrs. Lowe did indeed participate, preparing materials for the workshop and was released by the district to participate in the workshop. She has taken initial steps to determine prospective teacher participants for a similar workshop in the Conrad Area School District. A workshop has not been held to date in the district due to a dearth of available participants in a proposed summer program and conflicting inservice programs in the district which have had a higher priority due to externally imposed mandates.

Mrs. Lowe is experienced and enthusiastic in conducting workshops and has eagerly promoted reading in content areas in the district. The bulk of the operation of the practicum, as indicated, occurred in a sister district rather than the Conrad Area School District.

Yours very truly.

Richard R. Koch

Dr. Richard R. Koch
Director of Curriculum

RRK:bw

NEWARK HIGH SCHOOL
NEWARK SCHOOL DISTRICT
EAST DELAWARE AVENUE, NEWARK, DELAWARE 19711
SCHOOL OFFICE (302) 731-2151 • GUIDANCE (302) 731-2157

February 8, 1978

Dear Nova Practicum Reviewer

The Group Practicum on "Helping Students Improve Their Reading Skills in Selected Content Areas" was conducted as is indicated in the report. Activities were well conceived and coordinated and project experiences exerted a positive influence on participating teachers. It made content area teachers more aware of reading needs of students. It showed content teachers ways to teach that helped students overcome some of the reading difficulties with the content material.

I considered the results of the workshop conducted last fall so worthwhile that I encouraged and supported the second workshop which was held last summer. Furthermore, we are hopeful of working with another group of teachers, including some from other high schools in the area, this summer.

The attitude shown by the participating teachers is most positive. This is somewhat of a surprise. I had expected some resistance from content teachers to emphasis on reading skills. They are eager to learn about reading and about ways they can teach with reading skills in mind. The planners of the project did set a good level of activity. The teachers kept their emphasis on teaching course content while they adjusted their strategy of teaching to reflect student reading needs.

Mr. Musselman and Mr. McLain have presented this program effectively to our staff. They and their co-workers in the project have helped students to overcome some basic obstacles to learning.

Wm Stockebrand

William J. Stockebrand
Principal

NEWARK SCHOOL DISTRICT
OFFICE OF THE DIRECTOR OF INSTRUCTION
NEWARK, DELAWARE

February 3, 1978

Director of Practicums
Nova University
College Avenue
Ft. Lauderdale, Florida 33314

Dear Sir:

The team of administrators from the Newark School District who are candidates for the doctoral degree from Nova University have asked that I review one of their projects: Helping Students Improve Reading Skills in Selected Content Areas. The administrators are Jerome M. Levy, Rebecca A. Lowe (who is from Conrad School District), William T. McLain, Richard C. Musselman, and Nancy A. Nelson. Over the last two years, this group has worked on a program to improve youngsters' reading skills in various content areas.

As Director of Instruction, and the one who must make judgments on the implication such projects have for the instructional program in the Newark School District, I have been extremely interested in this project. In my judgment, it is one of the better projects we have developed in the district within the last few years. It is particularly significant for the instructional program at Newark High School and the Ogletown Middle School.

The importance that I attach to the project is attested to, in part, by the fact that I decided to support a workshop for the development of the project. While commenting on this program, I would also like to point out to you that these people are all unusually competent and conscientious educators.

I believe that the additional competencies they gained through your program will enhance their ability to function as leaders in the public school system. I commend both the people, and the project which they have completed, most highly.

Sincerely yours,

Loren J. Thompson
Director of Instruction

mjh

DESCRIPTION OF SIX SLIDE-TAPES USED TO INSTRUCT TEACHERS

No. 1 -- Levels of Questioning: Identifies the five levels of comprehension (literal, interpretative, critical, assimilative, and creative) and relates them to the reading process. Included are explanations and examples of how carefully constructed teacher questions promote improvement in students' reading comprehension skills.

No. 2 -- Word Recognition: Provides an introduction to the nature and uses of word recognition tests. The presentation includes procedures for structuring, administering, and evaluating word recognition tests.

No. 3 -- Fry Readability Formula: Describes a procedure to determine the reading grade level of textbooks or other reading materials. Also included is an explanation of the relationship between the use of appropriately graded reading materials and the improvement of student reading skills.

No. 4 -- Cloze Procedure: Describes a procedure to measure students' abilities to read given materials for comprehension. Procedures for constructing, administering, and evaluating Cloze tests are described.

No. 5 -- IRI: Describes how to construct, administer, and evaluate Informal Reading Inventories. IRI test results indicate the extent to which students are able to understand and effectively use given textbooks and other written materials. Results also provide a basis for determining instructional emphasis.

No. 6 -- PQ4R: Explains how students' reading study skills can be improved through the use of a study method called PQ4R. The study method involves six activities (Preview, Question, Read, Reflect, Recite, and Review), and each activity is carefully discussed in the presentation.